

# AMERICAN VETERINARY REVIEW.

JANUARY, 1913.

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## EDITORIAL.

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### EUROPEAN CHRONICLES.

PARIS, November 15, 1912.

#### INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY.—

When the following will arrive before the readers of the REVIEW it will be two months since the event will have taken place. A reference to the dates when this international congress (first of its kind) occurred and the time my chronicle must leave here to be in time across the Atlantic will explain my notice only coming out to-day.

Opened on the 17th of October, the first *International Congress of Comparative Pathology* from the first day proved to be a very successful meeting. The number of present registered 1,200, a figure that (generally speaking) is very seldom realized on similar occasions.

Since ten years that the Society of Comparative Pathology has existed it has been only on that last occasion that with the noble and persistent efforts of its General Secretary, Veterinarian Grollet, that it has succeeded in gathering together scientists, physicians, veterinarians and even botanists, coming from every part of the world, to bring together their knowledge on subjects of universal scientific importance.

It was indeed a truly international meeting, as in the list of members, among the many French names that were present at the opening was contained those of active members or of governmental delegates from Asia, South America, Belgium, Denmark,

Egypt, Holland, Hungaria, Italy, Norway, Portugal, Roumania, Russia, Switzerland, etc.

The Congress held its meeting in the great amphitheater of the School of Medicine, which on the day of opening was decorated with national flags and packed with scientists beyond imagination.

The ceremonial of opening was carried according to programme, which was well laid out. Professor Roger of the Faculty of Medicine and Professor of Experimental and Comparative Pathology, delivered his address and was followed by a member of the French Government, the Secretary of Public Instruction, who declared the session open.

The various governmental delegates also made speeches relating to the importance of the subject and the interest taken by their respective governments in the doings of the Congress, and the real work of the assembly began and lasted until the 23d of October, when it adjourned.

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To review the entire series of the reports presented would require more space than I can occupy in this chronicle and I must refer those interested to the valuable volumes published by the house of Masson & Co., 120 Boulevard St. Germain.

I may, however, call the attention of our readers to some of the reports as they were presented in the few days of the meeting.

On the first day the *parasites common to man and animals* were considered. The vermiform affections were treated by Professor Perroncito of Italy, Devé, Weinberg and Ch. Morot. Vegetal parasites were reported on by Prof. A. de Jong of Holland and Professor de Beurmann. The microbial diseases were considered by Dr. Nathan-Larrier.

On the second day the nervous diseases were reported on by Dr. Marchand and Professor Petit of Alfort at the morning session. And in the afternoon the subject of human and aviary diphtheria gave rise to a very important report, and communica-

tions from Prof. F. Arloing, Bordst of Bruxelles, de Jong and Rodet.

On the morning of the third day rabies was the subject under consideration, and was treated by Messrs. Dr. Luzzani Negri, Professor Babes of Bucarest, Dr. Remlinger from Tangier, Piot Bey of Egypt and others. The afternoon was occupied with vegetal pathology. Four reporters and a large number of communications filled up the entire seating.

On the Monday morning Dr. Ravenna of Modena and Garnier of Paris considered the comparative study of cirrhosis, while in the afternoon the pathogeny of tuberculosis was treated by Professor Calmette, Director Vallée, Professor Lignières and Mr. Chaussé. There were also a large number of communications from various members, Dr. Jong, Bruschetini from Genoa, Oceanu from Bucarest, Dr. V. A. Moore from New York, Dr. Sata from Japan, etc.

The morning session of the following day was occupied by Dr. Carrière and Tomarrin from Berne and N. Chaumier on variola and vaccinia. In the afternoon the pathology of the lower animals was treated by Perroncito; on bees and silkworms by Dr. Jugeat, and Dr. Morine of Ohio on fishes, etc.

Cancer was reported upon in the morning of the last day by Professor Memetrier and in the afternoon metaloscopy by Mr. Dubois, Sanitary Veterinarian.

A glance at this rapid mention of the work done at the Congress will tell not only how important the subject of comparative medicine is, but also of the general great interest that it has gained all over the scientific world. It is not because it is a new thing as one present at the inauguration was remarking that the Congress succeeded. No. It is because at last as science has progressed facts related years ago have become more and more recognized, and of greater importance in that ever immense open field of medical scientific inquiries.

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**HUNDRED AND FIFTIETH ANNIVERSARY OF THE LYONS VETERINARY SCHOOL.**—The celebration of this anniversary took

place according to the programme which had been carefully prepared. It was a grand professional manifestation which, by an almost unanimous expression, was a magnificent success. Prepared since a long time by the regretted great veterinarian, Professor Arloing, who, already at the inauguration of the new school of Belgium, had invited all present in the name of the French Government to come to the festival of the anniversary of the first veterinary school and the bi-centennial of Claude Bourgelat, Arloing had then exerted all his efforts to make the celebration what he hoped he could do to glorify the memories of the celebrated founder.

Destiny ordered differently; Arloing dead, Director Faure, his successor, did all he could to continue the preparations and his efforts were well rewarded by the grand results in which participated a great number of schools from different parts of the world, delegates from various government and veterinary societies, civil and military veterinarians having brought to the celebration their full appreciation of the ceremonies of the day.

At the opening of the first day, October 26th, a very large number of official authorities, with the directors of the three veterinary schools of France, their staff of professors, the chief veterinarian of the army were present, and also delegates of the European countries: Dr. Eberlein, of Berlin; Olt of Giessen; Frick, of Hanover; Giesenhagen, of Munich; Veterinary Inspector Hanka, from Austria; Professors Dupuis, Meuleman, Degive, Bredo, of Belgium; Professor Bang, of Denmark; Piot Bey, of Egypt; Professor de Castro, of Madrid; Sir John McFadyean, of London; Stockman, of London; Mettam, of Ireland; Director Schimmel, of Utrecht; Professors Hutyrá and de Ratz, of Hungary; Lanfranchi, of Parma; Perroncito, of Turin; Director Malm, of Norway; Professor Noguera, of Lisbon; Happich and Negotine, from Dorpat (Russia); Professors Rieglez and Udriski, of Roumania; Kjerrulf, of Sweden; Professors Ducrot and Burgi, of Switzerland; even from the Argentine Republic; Dr. Theiler from South Africa, etc.

To this long list ought to be added the delegates of many scientific, medical and veterinary societies.



Many excellent speeches were delivered and then the entire programme, followed by a visit to the various buildings of the school, laboratories, etc., and the banquets.

The inauguration of the monument to Professor Galtier, a grand and respectful homage to Professor Arloing, having given occasion to speeches of admirable conception by venerable Professor Chauveau.

The inauguration of a marble plate to Sanitary Veterinarian Leclerc closed the series of those festivals, after a brilliant reception given at the Government Hall by the municipal authorities of the City of Lyons, and thus ended one of the most imposing ceremonies that the veterinary profession has ever organized.

Strange to remark that nothing is said in the reports to hand of the Museum of Professor Aureggio.

Is it not regrettable that the veterinary profession of America had no official delegates among those which had been sent from all over the world?

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**INTRARACHIDIAN PUNCTURE.**—The practice of lumbar puncture with its different applications is far from occupying in veterinary medicine the very importance place that it holds in human practice, and notwithstanding the satisfactory results which have been obtained and published by eminent masters and careful, conscientious practitioners the method has not become generalized.

The principal applications where it has found (so far) its use are as means to produce analgesia, as therapeutic injections or as means to reach a diagnosis. These have been the object of careful reviews, one by Adjunct Professor R. Lasserre, of Toulouse, and the other by Dr. Mattcini Rafaello, of Pisa, where these applications are successively considered.

**RACHIDIAN ANALGESY.**—First resorted to by Dr. L. Corning, of New York, in 1885, it found gradually its indication in human surgery, and then in veterinary medicine, when publications of experiments made by Cuillé and Sendrail, Podasca, Angelo Baldoni, in using cocaine injections were made between 1901 and

1905. Erhardt, of Germany, in 1908, reported the results he had obtained with solutions of tropacocaine, and finally Lichtenstern, another German veterinarian, published an important pamphlet on the same subject, relating the observations that he had obtained in its use in 28 cases by the use of solutions of stovaine and novocaine. For these authors this mode of analgesia is at the disposal of the most careful practitioner, is very simple, and far less dangerous than chloroform or ether, and besides has for country practitioners the great advantage that it does not require the help of any assistant.

In horses and cattle the entrance into the rachidian canal can be gained between the spinous processes of the lumbar vertebræ. But with these animals as in dogs the ideal spot is through the relatively large and easily reached space between the last lumbar vertebræ and the sacrum. A long, fine trocar, 11 to 13 centimeters long, or for small animals the needle of a syringe of Pravaz is with that syringe the instruments that are necessary. For large animals, a bistouri may also be at hand to make a little opening of the skin. The operation can be performed standing or with the animal cast. This is, however, safer and better, as it is then easier to reach the interspinosum foramen; the danger of having the instrument broken by struggles of the animal is reduced, the escape of a certain quantity of cephalo-rachidian fluid indicating that the needle has arrived at the proper place, and finally the effects of the muscular paresia remain without inconvenience, the animal being "in certain cases so quiet during an operation even very painful that he eats the hay placed before him," writes Lichtenstern.

The operation needs some careful attention, such as avoiding to puncture against a vertebræ and watching for the escape through the cannula of the trocar of a more or less abundant quantity of cephalo-rachidian fluid, which may be in drops or in a stream, clear or slightly colored by blood.

The solution must be injected slowly.

The anesthesia takes place in various times according to the strength of the solution, or the addition of substances likely to

retard the absorption of the anesthetic. The extreme figures have been between 3 and 30 minutes. It lasts between half an hour and two hours. No accidents can result from the operation. There is no danger whatsoever, when it is performed aseptically and that the spinal cord has not been wounded, an accident which is exceptional although serious when it occurs.

Rachidian analgesia finds numerous applications in veterinary medicine, write Caillé and Sendrail. "All the operations of the hind quarter or the abdomen, such as laparotomy, kelotomy, castrations, tenotomy, reductions of fractures or dislocations, operations on the rectum, the genito-urinary organs the foot, etc., can be performed under it.

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Although this anesthesia can be of advantage and indicated in surgery, there seems to be no case in record when it was resorted to. On that account therapeutic injections are the only ones that are to be considered. At the origin, Leonhard Corning used it to overcome the very severe pains observed in some diseases of the spinal cord in man. Later on injections were tried in man for the treatment of tetanus. In fact it is principally in this disease that the greatest number of trials were made. Roux, Borrel and Courmont have reported a number of cases.

Sendrail and Caillé, Besnoit experimented with them also with various results. They consisted in a manifest reduction in the progressive and rapid aggravation of the disease after each injection and the conclusions that such treatment would be susceptible of bringing on recovery if it was practised as soon as the first sign of the disease appeared and particularly when the wound of introduction is on the hind quarters. And again the operation is simple, scarcely painful, can be performed with the animal standing and if necessary repeated several times.

Larthomas and Escoffier report a case cured with the injection of antitoxic serum. In Germany Lichtenstern relates the good results obtained by intrarachidian and intravenous injections of serum.

The injection of serum must be repeated. Antitoxic serum however is not the only agent used for the injection. Solutions of sulphate of magnesia have also been employed, principally in human medicine. Solutions of strychnine also. Two cases of recovery of paraplegia are recorded by the injection of solution of nitrate of strychnia gram 0.025 in 10 parts of distilled water.

It was expected that in the treatment of chorea these injections might be of advantage. Sulphate of magnesia was used in man and also in dogs. Reported favorably in man by Marin-esco, it was not as satisfactory with Sendrail.

From the observations made it results that lumbar puncture with intrarachidian injections may be used advantageously in the therapeutic treatment of some diseases of our domestic animals, tetanus and paraplegia principally, and the results known deserve the attention and ought to stimulate new trials.

The last application of the lumbar puncture, diagnostic means, consists in the collection of some cephalo-rachidian fluid for examination to confirm a diagnosis. It has not yet entered into the domain of veterinary medicine. It is a chapter of semeiology to create in our branch of medicine.

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AGAIN THE SURGICAL TREATMENT OF ROARING.—That the object of Williams' operation for the relief of roaring consists in the removal of the mucous membrane which lines the laryngeal ventricle is now generally admitted as the best way to obtain the obliteration of that cavity and prevent the vibration of the paralyzed laryngeal cartilage, the arytenoid. The method recommended by Williams is well known, and the manner in which the result can be obtained seems to have various advocates.

The grasping instrument of Williams has given good results and several operators have obtained with it very satisfactory statistics. It has not had many objections that I know. However, Professor Cadiot has suggested in preference to the use of the Blattenberg burr to grasp, hold, twist and pull out the ventricular mucosa, a pair of forceps measuring about 25 centimeters

in length. The branches have at their end teeth of small size, they are slightly convex outward and provided with three hooks, the middle one a little stronger than the others. Introduced in the ventricle, the mucosa is taken hold of and by a double motion of twisting and pulling, it is gradually mobilized and brought out of the ventricle when it is made loose from the borders of the ventricular opening or cut off with scissors. Will this forceps do better than Blattenburg's instrument? I do not know.

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In the *Veterinary Journal* there is on the subject of treatment of roaring in horses an abstract from a translation by Mr. Gladstone Mayall, M.R.C.V.S., of a clinical lecture of Dr. R. Eberlein of the Royal University Veterinary School of Berlin, from which I extract only the part which relates to the operation of excision of the laryngeal ventricles.

After all the primary steps of disinfection, securing the animal, opening of the larynx, etc., Dr. Eberlein says: "Introduce the index finger of the left hand into the left laryngeal pouch and by slight bending and lifting of the first joint of the finger stretch the dorsally situated vertex of the same at the joining place of the vocal cord, to the processus vocalis of the arytenoid cartilage. I then make at this place with the pointed or broad laryngeal knife a triangular incision, whose sides are only  $1\frac{1}{2}$  centimeters and of which one extends to the anterior edge of the vocal, the second to the ventral edge of the arytenoid cartilage. The incision only penetrates the mucous membrane. This is stretched here so that the incision gapes just a little. Now I lay the knife on one side, take out the index finger from the pouch and insert it into the triangular incision and push it slowly and rotating and boring slightly along the wall of the pouch and into its depth, whilst I follow the extent of the pouch in its direction to the crico-arytenoid cartilage joint. When I have reached the base of the pouch, which I can feel quite well, then I bend and turn the first joint of the finger against the base of the pouch whilst leaving the rest of the finger in the wound, thus loosening



the base by slight traction from its foundation and press it forward against the entrance of the pouch. By this procedure the pouch will be turned inside out and rest on the finger like a thimble. Now, I pass the button laryngeal knife into the wound, at the same time holding the pouch fast with the thumb, if necessary, so that it does not slip off the forefinger and separate the pouch completely, whilst I cut along the edge of the entrance of the pouch \* \* \*."

No suture, no bandage are necessary. We fancy that at the time that the long clinical lecture of Dr. Eberstein was published in the German Archiv. the last improvement of Williams was not known to the learned director.

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In Italy the subject has also attracted the attention of the skillful surgeons that are practising and among them Prof. D. Bernarlini of the Institute of Veterinary Pathology and Surgical clinic, who has written a concise pamphlet headed "*The Surgical Treatment of the Paralysis of the Left Vocal Cord of Horses*," of which I have received a copy. Here also there is presented a concise consideration of the various proposed methods of treatment from the time of Gunther to that of Williams and after criticizing the last, in the manner with which the obliteration of the ventricle is obtained, Bernardini says that the destruction of the mucosa is to be obtained with cauterization.

"The animal without any preparation of diet, only secured in stocks, with the head raised and in extension, after disinfection with tincture of iodine and a previous alcoholic rubbing, an incision is made on the median line from the thyroid cartilage to the first tracheal ring, exposing the sterno-hyodeus and thyroideus muscles and under them the crico-tracheal ligament. This is incised transversely so as to permit the introduction of a tracheotomy tube. With the index acting as guide, the galvano-cautery is introduced easily, passing between the vocal cords, and is brought in contact with the cavity of the laryngeal ventricle. The electric current is allowed to pass for ten seconds. A few

minutes are allowed to pass to permit the cooling of the instrument when it is removed." A Thompson tracheotomy tube is introduced and left for a few days. No further care is required, the cicatrization is quite rapid.

Bernardini believes that with this method even the large number of successful cases treated by Williams would be greater. Time and experiments may tell, but Williams' operation is so simple!

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BIBLIOGRAPHY: *Handbuch der Vergleichender Anatomie der Haustiere* (Treatise of Comparative Anatomy of the Domestic Animals).—By Director Prof. W. Ellenberger and Prof. H. Baum of the Superior Royal Veterinary School of Dresden, published by Aug. Hirschwald n. w. Unter den Linden, 68, Berlin.

This is the thirteenth edition of the work. The preceding ones were after various authors. From the first to the fourth after Gurlt, the fifth Leisering and Müller, the sixth and seventh with Leisering, Müller and Ellenberger, the eighth by Ellenberger, Müller and Baum, the ninth, tenth, eleventh, twelfth and this last by the two authors.

This volume is a very large work of nearly 1,100 pages, with 1,078 illustrations, many of them being colored. It is divided into seven principal chapters, osteology and syndesmology in the first, myology in the second, splanchnology in the third, under which are included the organs of the thoracic, abdominal and pelvic cavities, and treating of digestion, respiration, circulation, urinary depuration, generation and with a special division for the consideration of the blood vessels, arteries, veins and lymphatic system. In the fourth chapter neurology, in the fifth the organs of senses, sight, hearing, smell, taste and touch, in the sixth the external tegument, the skin, and in the seventh the anatomy of birds.

As can be seen by these, the classification differs somewhat from that which is generally found in other works on anatomy, and the skin forms the subject of a special chapter.

The manner in which the descriptions are followed in the var-

ious chapters is the same, the anatomy of man finds a small place, sufficient to give a comparison with the principal object of the work; *viz.*, the comparative anatomy of horses, cattle, swine and carnivora. Each of them receives considerable attention from the authors, who give for every species a more detailed description than is generally found in veterinary works on anatomy. Each general chapter is preceded by generalities and considerations upon the development of the organs treated. There are among the many plates that illustrate the book, several which deserve special attention; *viz.*, those which I believe are reproductions from the work on the lymphatic system by Prof. A. Baum that I had the pleasure to notice in a previous chronicle. I refer to those which expose the distribution of the lymphatic system of the whole organism in cattle, the head, the thorax, the abdomen and the extremities. The coloring illustrating the circulatory system is very neat and must be of great help to the reader.

There are many other points of interest in *Handbuch der Anatomie der Haustiere*, and I regret that I cannot go into greater details relative to the value of this new addition to German veterinary literature. Our *confrères* on the right side of the Rhine are all hard workers, they have already published many valuable treatises on anatomy and the names of Gurlt, Müller and Leisering are familiar to anatomists of all nations. Professor Ellenberger and Professor Baum have crowned the work done by their predecessors with one which it seems to us will for years to come be *the* standing work of superior excellence.

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SUNDRY ACKNOWLEDGMENTS.—The *Country Review* from Baton Rouge, La. Several numbers of this valuable paper have reached me, bringing me the many communications of our always working contributor, Dr. Dalrymple, and also the proof that he does not neglect his friends, if far away.

The *Catalogue* and *Bulletin* of the Michigan Agricultural College, with the organization and announcement of the Veterinary Department, with Dr. R. P. Lyman as Dean.

*Circular 201* of the Bureau of Animal Industry, *Tuberculosis of Hogs*, by Dr. J. R. Mohler, Chief of the Pathological Division, and Henry J. Washburn, Senior Pathologist. The circular has few well made illustrations.

A. L.

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THE ARMY VETERINARY BILL IS ALIVE; IT IS ON  
THE CALENDAR OF THE HOUSE OF REPRESENTATIVES.

The sixty-second Congress is now sitting in its third and last session, which closes March 4. The whole profession is on the *qui vive* concerning the chances of passage for the Army Veterinary Bill (H. R. 16843) to Consolidate the Veterinary Service U. S. Army and Increase Its Efficiency. Never was there such a sense of solidarity on the part of the American veterinary profession in favor of a bill as during the session of Congress which closed in August; never before was the profession carried to such a pitch of united interest in army veterinary legislation, strengthening each day as long as Congress remained in session, as was to be observed amongst us all last summer. The measure was not carried before Congress closed. Nevertheless it is not dead. It is alive. It is on the calendar of the House of Representatives and it is highly probable that it will come up for a vote by the lower house soon.

Lest the members of the profession have not clearly in mind all the conditions which prevented our securing the passage of the Army Veterinary Bill in the closing days of Congress, familiarity with the facts may be gained in a few words.

A week prior to the adjournment, Dr. W. Horace Hoskins writes, every vestige of opposition to our bill in the House had passed away, and in addition to this gratifying situation, such support had been pledged us in the last ten days in the Senate that had we not have failed in the House our bill would surely have passed the Senate, more than fifty of whose members had pledged their support to its passage. Two very great obstacles arose which prevented the accomplishment of our wishes and plans. First, the Senate Military Subcommittee, under the leadership



of Senator Bristow of Kansas, refused to report favorably our bill and therefore the Senate Military Committee as a whole, a majority of whom were committed to our favor, were unable to act on the matter, because the subcommittee had to act before the whole Senate Military Committee could act. As there was some opposition to the bill in the House in the early spring, our professional representatives did not deem it safe to have the bill put on the "unanimous consent calendar," for the reason that the opposition to the bill by any one member would have caused the necessity of reintroducing the bill if it were lost in that way. The bill was therefore kept on the "suspension of the rules calendar," which was to be considered during the last five days of Congress. The very serious contentions that arose during the closing days of Congress and the absence of a large number of members incident to the Presidential contest and because of their own nervousness over re-election, brought it about that when the "suspension of the rules calendar" was being considered, Representative Victor Murdock of Kansas raised the question of no quorum. The House was unable to secure the necessary number of members; hence no further business could be transacted and adjournment followed, leaving our Army Veterinary Bill along with other bills on the calendar for consideration during the winter session of Congress.

The Army Veterinary Bill, as every man knows, is pushed by the profession because it grants the rank of second and first lieutenant to all veterinarians in the U. S. Army and relieves the profession of inequality with all other professions in the Army. This bill has passed its first reading—for it was favorably reported out of the House Military Committee April, 1912—and it should be favorably acted upon on the floor of the House and in the Senate. The time, however, is very short, for on account of the Christmas holidays, Sundays and other holidays, Congress has only about sixty working days in all. Still everything favors the bill, and the halt which the bill suffered at the close of the last session but serves to put a fine edge on our courage. The military establishment loves fighters; it respects our steadfastness and integrity of purpose; it is waiting to say bravo, if we



win. The hand of destiny is with us. Let us firmly resolve that the bill shall pass and pass it will. For events outside the profession favoring the bill are in keeping with the wholesome and altogether heightening influences within the profession which are pushing the bill along like a hurricane. The president of the A. V. M. A., Dr. John R. Mohler, is keen for the bill and he lives in Washington. The A. V. M. A. Legislative Committee has commenced its activities in the capital. The whole profession will soon be called upon to rally for the bill and it will leap to the call. Victory after fifty years fight for recognition as a profession in the Army can then be celebrated at the fiftieth national veterinary convention in New York next September. A man of fifty is at his full strength; surely a profession fifty years old ought to be able to win this long drawn out battle.

[ADDENDUM.]—The receipt of a communication from Chairman Hoskins of the Committee on Legislation, A. V. M. A., at the last moment renders a slight addition to the foregoing necessary; as, after a conference in Washington on December 16, the committee found it advisable to have the Bill transferred from the "Suspension of Rules" calendar to the "Unanimous Consent" calendar, as explained in the following extract from Chairman Hoskins' letter:

"For many months we have been on the Suspension of Rules calendar No. 3. As all Unanimous Consent bills have precedence over Suspension of Rules Calendar bills, and on every day set apart for consideration of bills under these two rules of the House we have failed to be reached (in fact, the Suspension of Rules Calendar has not been reached for several months) after a conference in Washington on Monday, December 16, when we again failed to be reached, we decided to have our bill transferred to the Unanimous Consent calendar, and early after January 2, 1913, when Congress reconvenes, we will run the gauntlet of this calendar. You will remember that one vote of opposition will set us back, and make necessary much of our work to be done over, but we are determined to win this bill this session of Congress, if possible.

"The situation in the Senate grows more favorable day by day, but on January 1, 1913, we will lose in Senator Bailey, by his resignation from that body, one of our staunch friends. This makes it all the more important that we win in this Congress, if possible."

## ORIGINAL ARTICLES.

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### THE LIMITATIONS OF THE TUBERCULIN TEST.

By E. G. HASTINGS, COLLEGE OF AGRICULTURE, UNIVERSITY OF WISCONSIN,  
MEMBER OF THE WISCONSIN LIVE STOCK SANITARY BOARD.

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During the twenty years that the tuberculin test has been in practical use, its value has been demonstrated beyond all doubt. Without it as a means of detecting the diseased herd and the tubercular animals therein, the fight of the practitioner, the sanitarian, and the stock owner against bovine tuberculosis would be a hopeless one. Its value has been shown in the elimination, by its aid, of tuberculosis from countless herds, and in the gradual reduction of the amount of the disease in many sections of our own country and in other lands; something that could not have been easily accomplished without the tuberculin test. This has been done in spite of the fact that the spread of tuberculosis has been favored by the constantly increasing commerce in dairy cattle, and through the whole-milk creameries, whose by-products, skim milk and buttermilk, have often served to transport the disease to new fields.

In spite of the proven value of the test, constant mutterings are heard against it, uttered by the stockman, the veterinarian, and the agricultural press. Stockmen often deny the value of the test because they do not wish to acknowledge the existence of the disease, at least in their herds. Again, they have heard something adverse to the test, and hence decline to use it, even though they desire to learn the condition of their animals.

It probably seems to the farmer that all should be known concerning the test that need be known so far as its practical use is concerned. Millions of cattle have been tested, so experience has not been lacking. It seems to the writer that here, as often elsewhere, the persons applying the test have not stopped to con-

sider its nature, and, again, certain points in the mode of action of tuberculin have been pointed out only comparatively recently.

From a somewhat extended experience with the tuberculin test as an instructor and member of an experiment station staff and as a member of a state live stock sanitary board, it seems to the writer that the practitioners and stockmen have been led astray in regard to the test. The stockman has been led to believe that it was a means of detecting the presence of any and all tubercular animals, a belief which has been shared by the profession in great part. They have read statements that the test is a wonderfully accurate diagnostic agent, as it is, and the point has been emphasized by figures showing the results of post-mortem examinations made on reacting animals. The government has said that 98 per cent. of the animals that have reacted to the tuberculin prepared by the Department of Agriculture and that have been examined after slaughter have shown lesions of tuberculosis. The state authorities of Pennsylvania have stated that only 8 out of 4,000 reacting animals slaughtered in that state failed to show lesions on slaughter. The writer does not question the accuracy of these or other similar statements, although, when the only discoverable lesions are stated to be calcareous deposits in the intestines, one might be justified in having a little doubt about the correctness of the diagnosis in all cases.

The harm of such statements as to the accuracy of the test is that the converse is believed to be true by the average reader; *i. e.*, that all cattle in whose bodies tubercle organisms are to be found react to the test. If this is true, then the testing of a herd by an able practitioner, the removal of the reacting animals, and the thorough disinfection of the stables should result in a healthy herd; or at least a retest followed by the removal of the reacting animals and disinfection should give a healthy herd. Many practitioners in attempting to eliminate the disease from a herd extensively infected have had experiences that have not agreed with this theoretical result. The disease has been found to persist after years of conscientious effort on the part of the veterinarian and the owner. The latter, if not in full sympathy with the

test, has been led by his experience to denounce it as a fake. If his faith in the test was more firm, he has been led to seek the cause in inefficient testing or poor tuberculin, both possible factors. The veterinarian with his faith in the accuracy of the test has been led to seek the cause of persistence in faulty disinfection, again a possible factor. Both seek to lay the blame at the other's door. The result has often been that the owner has abandoned the task of obtaining a healthy herd from a diseased one by the use of the tuberculin test. A concrete example of this was given in the *Breeders' Gazette* within the last few months in an article detailing the experience of a man in charge of a herd belonging to one of the state institutions of Illinois. The discouragement and abandonment of the task is to be traced to the fact that he had been led to expect results that in the light of present knowledge he could not reasonably have hoped to attain. If his expectations had been more in accord with probable results, he would not have become discouraged.

In order to demonstrate the belief of one veterinarian at least that testing and removal of reactors should result in a healthy herd, the statement made by Dr. G. S. Baker, quoted in the Proceedings of the American Association of Medical Milk Commissions, 1911, is here given: "When the work (the elimination of tuberculosis from herds producing certified milk) was started in California, it was supposed that all that was necessary to do was to test the original herd, exclude the reactors, and disinfect thoroughly."

A Wisconsin herd has been diseased for at least ten years. Repeated tests have been made, the reactors removed, and yet the disease persisted. An expert's aid was enlisted. This expert adviser has made a public statement that he believed the persistence of this disease was due to faulty disinfection, from which it may be inferred that he did not believe that the test itself could be a factor concerned.

It has been related to the writer that some practitioners will guarantee the results of their tests, a witness to their belief in the accuracy of the test. Such statements and such belief can explain



the introduction of the following bill in the legislature of Wisconsin in the session of 1911.

"No permit shall be granted to any person to apply the tuberculin test to any cattle, other than his own, until such person shall have given a bond to the state of Wisconsin in the *penal sum of two thousand dollars*, conditioned that he will pay to the owner of any stock so tested by him and determined and found by him to be affected with tuberculosis and condemned to be slaughtered under the United States supervision on account of such determination the *actual value* of the said stock in excess of the amount allowed to him as now provided by law, and, in addition thereto, damages to the *extent of twenty-five per cent. of the actual value of said stock*, in case it shall be found upon the said government test that the said stock was not so affected by tuberculosis."

It is very certain that had this bill been enacted into law no veterinarian with any detailed knowledge of the tuberculin test would have continued to apply it. These statements are included to emphasize the point that in the minds of many men, laymen and veterinarians, the tuberculin test has been considered to have few, if any, limitations.

If an animal is killed after having given a reaction to tuberculin, and on post-mortem examination no lesions or only minute ones are found, many are only too glad to find therein ground for the condemnation of the test. A number of cases have been brought to the writer's attention where tubercular animals have been discovered to be present in the herd shortly after a test had been made and the reactors removed.

In a recent article in this journal Dr. S. H. Gilliland has presented the results on the elimination of tuberculosis from a herd by means of the Bang method and vaccination. The results of the consecutive tests are presented in Table I. It will be noted that two and one-half years were required to remove all tubercular animals from this herd, and this under quite ideal conditions in most ways. The manner in which the disease was reintroduced will be referred to later.



TABLE I. RESULTS OF CONSECUTIVE TESTS OF A HERD FROM WHICH THE REACTING ANIMALS WERE REMOVED AFTER EACH TEST.

Date.	Animals Tested.	Animals Reacting.	Per Cent. of Reactors.
May, 1904 .....	160	42	26.2
June, 1905 .....	120	13	10.8
November, 1905 .....	137	7	5.1
April, 1906 .....	154	13	8.4
November, 1906 .....	137	5	3.6
April, 1907 .....	201	0	0.0
October, 1907 .....	131	0	0.0
April, 1908 .....	145	2	1.4
November, 1908 .....	169	3	1.8
April, 1909 .....	151	0	0.0
May, 1910 .....	151	5	3.3
June, 1911 .....	160	4	2.5

That the tuberculin test has certain limitations, it seems to the writer, has never been sufficiently appreciated by the veterinarians or stock owners. This lack of appreciation is largely due to the fact that the subject has never been presented to them in a proper way. With an appreciation of the limitations of the test a veterinarian would no more guarantee the correctness of his test as showing the absence or presence of tuberculosis than would a surgeon the results of an operation for appendicitis.

Tuberculin is the product of a specific organism, the tubercle bacillus. The organism is allowed to produce the maximum amount of growth in glycerine bouillon, which is then heated together with the growth for a number of hours to the boiling point of water. The subsequent operations in the preparation of tuberculin are designed to free it from the dead organisms and to reduce it to a form in which it will keep well. Tuberculin thus contains the by-products of the growth of the organism and such materials as can be extracted from the cells by a hot aqueous solution of glycerine. Some principle or principles contained therein when introduced beneath the skin of a tubercular animal cause a disturbance of the bodily functions. This disturbance includes a greater or less thermal reaction, and since this can be easily measured it is the thing used to determine whether an animal is diseased or not.

The technique of the test is known to every practitioner. It

includes a series of ante-injection temperatures, the injection of the tuberculin, and a series of post-injection temperatures. In the case of a tubercular animal, the reaction fever usually appears within eight to sixteen hours, it persists for a few hours,

TABLE II. TYPICAL REACTIONS IN TUBERCULIN TESTS.

	Before Injection P. M.															
	2	4	6	8												
1.....	1.4	2.0	1.5	1.6												
2.....	1.0	1.8	1.6	1.5												
	After Injection Hours.															
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1...	2.2	2.0	2.6	3.8	4.8	5.2	4.2	3.8	2.8	3.0	2.6	2.2	2.4	1.8	2.2	1.8
2...	2.0	2.0	2.8	3.5	4.7	5.4	5.6	3.9	3.2	3.5	3.0	2.2	2.0	1.8	1.5	1.5

and within fourteen to twenty hours the temperature usually reaches normal. In Table II. are presented the temperature records of animals giving a perfectly typical positive reaction.

TABLE III. VARIATIONS IN THE TEMPERATURES OF HEALTHY ANIMALS.

Hour.	Temperature of Animal.	
	No. I. Degrees F.	No. II. Degrees F.
9 a. m.....	99.1	98.6
10 a. m.....	99.0	99.0
11 a. m.....	100.0	98.8
12 m.....	100.0	100.0
1 p. m.....	100.6	100.9
2 p. m.....	100.8	101.2
3 p. m.....	101.6	101.8
4 p. m.....	102.0	102.3
5 p. m.....	101.8	101.7
6 p. m.....	101.5	101.7
7 p. m.....	101.2	101.4
8 p. m.....	101.2	101.2
9 p. m.....	101.0	101.4
10 p. m.....	100.9	101.2
11 p. m.....	101.3	101.6
12 midnight.....	101.0	101.0
1 a. m.....	100.8	100.8
2 a. m.....	101.0	101.2
3 a. m.....	100.8	101.5
4 a. m.....	100.8	101.4
5 a. m.....	101.4	101.2
6 a. m.....	101.4	101.8
7 a. m.....	101.4	101.9
8 a. m.....	101.6	101.8

For the sake of brevity, the temperatures have been abbreviated, 102.2° F. is written 2.2, etc.

In the case of a healthy animal, the temperature readings after the injection should be much the same as before, since no disturbance is produced by the tuberculin. The test is thus apparently a most simple one; but there are many disturbing factors. The great fluctuations of the temperature of the individual animals is one. In Table III. are given the temperature of two animals for twenty-four hours. It is to be noted that the range of temperature is over 3° F. in each animal.

In order to determine whether the tuberculin has produced a thermal reaction, it is necessary to compare the ante-injection temperatures with the post-injection. The question at once arises as to what degree of variation shall be taken to indicate a reaction fever and the presence of tuberculosis. Many methods of interpreting the records have been proposed and are in use. The maximum before may be compared with the maximum after injection, a rise of from 1 to 1.5° F. or more being looked upon as indicating a positive reaction. Again, the maximum after injection may be compared with the average before, a difference of 2° F. or more indicating tuberculosis, or the greater reliance may be placed on the temperature reaching a specified minimum, at least of 104° F., after injection, with normal temperatures before. This variance in ideas indicates that there is no line above which an animal can be said to have reacted or below which it can be classed as healthy. The inevitable conclusion is that the interpreter of temperature records is between the devil and the deep sea. With any method he will remove healthy cows with all or most of the tubercular or else he will leave all the healthy cows in the herd together with some tubercular, and remove only a part of the tubercular; the former will be the result of too low a standard, the latter of too high a standard. In Table IV. are presented the maximum temperatures before injection and the maximum after injection, together with the extent of the reaction and the results of the post-mortem examination of a number of animals. The figures are taken from the results of the tests of a

TABLE IV. MAXIMUM TEMPERATURES BEFORE AND AFTER THE INJECTION OF TUBERCULIN OF TUBERCULAR AND HEALTHY ANIMALS.

Animal.	Before Injection.	After Injection.	Degree of Reaction.	Result of Post-Mortem.
1.....	102.2	102.6	0.4	Healthy
2.....	101.8	102.8	1.0	Healthy
3.....	102.6	104.2	1.6	Healthy
4.....	102.2	103.4	1.2	Healthy
5.....	101.6	104.0	2.4	Healthy
6.....	102.6	103.8	1.2	Healthy
7.....	102.3	104.6	2.3	Tubercular
8.....	102.4	104.8	2.4	Tubercular
9.....	102.5	103.0	0.5	Tubercular
10.....	102.0	104.2	2.2	Tubercular
11.....	103.6	103.8	0.2	Tubercular
12.....	102.0	103.6	1.6	Tubercular
13.....	102.0	104.0	2.0	Tubercular
14.....	102.4	102.8	0.4	Tubercular

large herd which was so extensively diseased that it was all sacrificed.

It will be noted that the temperature records of the tubercular animals can be duplicated in case of those showing no lesions of tuberculosis on post-mortem examination, which was most carefully made.

In a personal letter from a prominent veterinarian who is acting as expert adviser for the owner of a large herd, it is stated that in the handling of the herd all animals showing post-injection temperatures of 102.8° F. and above have been removed. Of the animals showing a maximum temperature between 102.8 and 103.5° F. 40 per cent. have shown lesions of tuberculosis on slaughter. If the minimum standard had been 104° F., tuberculosis in the herd would surely have persisted longer than under the plan adopted.

TABLE V. RESULTS OF POST-MORTEM EXAMINATION OF 1,200 ANIMALS THAT GAVE VARYING THERMAL REACTIONS AFTER THE INJECTION OF TUBERCULIN.

Maximum Temperature After Injection.	Percentage of Animals Found Tubercular.
105.8 degrees F. and above.....	98
104-105.8 degrees .....	84
103-104 degrees .....	62
103 degrees or less.....	56

In Table V. are presented the results of the post-mortem examination of 1,200 animals tested in Holland. The animals were slaughtered for beef soon after the test.

It is to be noted from the table that as the temperatures approach or are within the limits of those given by animals to which tuberculin has not been administered, the percentage of error increases greatly.

The inevitable conclusion from the data presented is that there is no *specific amount of thermal reaction* to tuberculin in the case of *tubercular* animals; that no method of interpreting the temperatures can have the effect of absolute separation of the herd into two parts, healthy and diseased. It is true that by far the greater part of the tubercular animals give such a thermal reaction that there is no doubt as to its significance.

In the typical reaction to tuberculin the fever appears eight to twelve hours after the injection of the tuberculin. This has led many practitioners to deviate from what is considered the most approved technique, namely, to take temperatures every two hours from the eighth to the twentieth hour after injection. Many cease taking temperatures at the sixteenth hour. The danger of such a procedure is shown by data taken again from Dr. Gilliland's paper.

TABLE VI. TEMPERATURE RECORDS OF TWO COWS.

	Proceda. Degrees F.	Francelmar. Degrees F.
5 a. m.....	101.4	101.4
7 a. m.....	102.0	102.0
9 a. m.....	101.6	101.8
11 a. m.....	101.6	101.6
1 p. m.....	100.6	102.0
3 p. m.....	101.0	101.6
5 p. m.....	101.6	102.4
Injection of Tuberculin.		
9 hours after.....	101.4	100.6
11 hours after.....	102.2	101.4
13 hours after.....	102.2	100.8
15 hours after.....	102.4	101.6
17 hours after.....	104.6	102.2
19 hours after.....	106.6	104.0
21 hours after.....	105.0	105.0
23 hours after.....	105.4	106.0



It will be noted from the temperature records that if the test had been closed at the sixteenth hour one, and probably both, cows would have been considered healthy. Thousands of tests have been made by practitioners in this country in which but three, two, or even one, post-injection temperature was taken.

The typical reaction fever lasts but a few hours. Records such as are shown in Table VII. are sometimes met. The ques-

TABLE VII. PERSISTENT REACTIONS IN TUBERCULIN TESTS.

Before Injection												
P. M.												

tion at once arises is not the fever in these cases due to some other cause than tuberculin? Again, a secondary reaction, such as is shown in Table VIII., may be met, a very decided departure from

TABLE VIII. SECONDARY REACTIONS IN TUBERCULIN TESTS.

Before Injection P. M.																	
	2	4	6	8													
1.....	1.2	1.8	1.6	1.6													
2.....	1.6	2.8	2.4	2.2													
After Injection Hours.																	
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1....	3.8	3.2	4.4	5.2	5.4	4.8	3.8	3.2	4.2	5.2	5.6	5.8	5.8	5.6	5.2	5.2	4.9
2....	4.4	4.2	4.6	5.8	5.4	5.4	4.8	4.2	3.5	4.9	5.8	6.2	6.0	5.4	5.6	5.2	5.4

the typical reaction to tuberculin. Someone must determine whether such records are to be classed as indicating a positive reaction to the tuberculin. The stockmen and practitioners are very likely to consider that some other cause for the continued fever must be present and that the animal should simply be looked upon with suspicion and be retested. The animals, the temperature records of which are given in Tables VII. and VIII., were slaughtered and found to be tubercular. Hence there is but

little doubt but that these were true but atypical reactions. Such records are constantly met with in practical work.

TABLE IX. RESULTS OF CONSECUTIVE TESTS OF REACTING ANIMALS.

Animal.	May, 1905.	Oct., 1905.	Sept., 1906.	May, 1907.	Oct., 1907.	Sept., 1908.	Results of Post Mortem Oct., 1908.
1.....	+	+	+	+	—	—	Tubercular
2.....	+	+	—	—	—	—	Tubercular
3.....	+	+	—	—	—	—	Tubercular
4.....	+	+	+	—	—	—	Tubercular
5.....	+	+	—	—	—	—	Healthy
6.....	+	+	—	—	—	+	Tubercular
7.....	+	+	+	—	—	+	Tubercular

It must also be recognized that not all infected animals react to tuberculin. During the period of incubation, which may be at least two months in duration, the animal does not respond to the test. After infection, the struggle between host and parasite begins, a struggle in which first one, then the other is gaining. The disease may continue to progress until death ensues, or it may progress for a short time and then go backward, even to complete recovery. More often in the bovine the disease becomes dormant, the lesions become encapsulated, but within the lesions the tubercle organisms remain alive for months and years. During a period of diminished vitality, the disease may become progressive again. While the disease is dormant in the animals, it is believed that no response to tuberculin is to be noted. Such animals are now classed as "ceased reactors." The period of persistence of this phase of tuberculosis and the non-reaction to tuberculin during this time is well shown in cases gleaned from a recent article by Dr. Rutherford. It will be noted that a number of the animals gave the last positive reaction in October, 1905, and yet were found tubercular on slaughter in October, 1908. Still others have ceased to react and have then again given positive reactions. Since these animals were kept in a diseased herd, it might be considered that they had become reinfected. If such a reinfection is possible after a natural infection, it would seem that vaccination does not promise much in the way of practical success.

In Table X. are presented data taken from an article by Dr.

V. A. Moore. The ninety-six animals had been purchased from a locality in which tuberculosis was especially prevalent. At the time of purchase none reacted to the test. After purchase the

TABLE X. RESULTS OF CONSECUTIVE TESTS MADE ON ANIMALS THAT DID NOT REACT AT TIME OF REMOVAL FROM A DISEASED HERD.

Date of Test.	Animals Tested.	Reacted.
July, 1904 .....	96	31
January, 1905 .....	65	8
July, 1905 .....	57	15
January, 1906 .....	42	15
July, 1906 .....	27	3
January, 1907 .....	24	2
July, 1907 .....	22	1
January, 1908 .....	21	1
August, 1908 .....	20	1

animals were kept under such conditions that infection, except from their own number, was impossible. The presence of animals in the incubation period, or having the disease in a dormant form at the time of purchase, would explain the persistence of the disease. The development of open cases between the semi-annual tests would explain the continued spread of the disease, so that at the end of four years but nineteen healthy animals remain.

It has long been known that some animals in advanced stages of tuberculosis do not react to ordinary doses of tuberculin. It is not believed, however, that such cases are numerous enough so that they need be considered as an important factor in the practical handling of the disease.

These difficulties which are encountered in the separation of healthy from tubercular animals, especially in the case of herds extensively diseased, by means of the tuberculin test has led the live stock sanitarian to assert that in the fight against tuberculosis the healthy *herd* must be considered as the unit, not the healthy *individual*. The same points led the commission appointed by the American Veterinary Medical Association to report as one of its recommendations that herds over 50 per cent. of the members of which gave positive reactions be handled, as far as eradication

of the disease is concerned, as though all the herd had reacted. If the non-reacting part of such a herd is removed, among them are almost certain to be some infected animals that will serve to continue the disease in the non-reacting part of the herd after separation. As the per cent. of infected animals decreases the importance of this factor diminishes, until in the case of a herd containing but few reacting animals it becomes an easy matter to eliminate the disease, while in the case of a badly diseased herd, especially if it is a large one, it becomes a task demanding patience, faith, and usually years of effort.

The fact that the disease may become dormant and again progressive has led the sanitarian to consider an animal that has once reacted to the test as one that should never be placed in a healthy herd. The danger of relying on a retest rather than on the first test is shown in case of the two cows previously mentioned. The temperature records have been presented in Table VI.; those of the retest, made about three months after the original test, are given in Table XI.

TABLE XI. TEMPERATURE RECORDS OF PROCEDA AND FRANCEL MAR ON RETEST, FEBRUARY, 1909.

	Proceda.	Francelmar.
5 a. m.....	102.4	102.4
7 a. m.....	102.0	102.1
9 a. m.....	99.4	101.2
11 a. m.....	99.4	100.4
1 p. m.....	100.4	100.8
3 p. m.....	100.6	101.0
5 p. m.....	102.2	101.4
Injection of Tuberculin.		
9 hours after.....	102.6	100.6
11 hours after.....	102.4	101.4
13 hours after.....	100.6	101.0
15 hours after.....	101.2	102.0
17 hours after.....	103.0	102.2
19 hours after.....	101.2	101.4
21 hours after.....	103.0	101.6
23 hours after.....	102.6	.....

It will be noted that neither have given a positive reaction. Tests were made in April, 1909, and May, 1910, at which times the animals did not react. Late in the summer of 1910 both began to show symptoms of tuberculosis; they were slaughtered

and found to be extensively diseased. Their return to the herd is the undoubted reason for the second reinfection of the herd as shown in Table I.

In the greater majority of cases animals give an undoubted positive or negative answer when the tuberculin test is applied. In probably about 15 per cent. of the animals examined the test is in error. By far the greater numbers of errors are due to the non-reaction of tubercular animals. This 15 per cent. is what has led many to doubt the value of the test. This feeling can be overcome only by a full recognition of what can and what cannot be expected from the tuberculin test when it is used to eliminate tuberculosis from a diseased herd or to prevent its introduction into a healthy one. The stockman must decide for himself whether it is wise for him to make use of this test with those limitations which have been discussed herein. This decision will be influenced by what the stockman thinks is the economic importance of the disease, a subject on which no one has any adequate knowledge. It is the belief of the writer that tuberculosis causes losses far in excess of any estimates that have been made by the Bureau of Animal Industry. In private conversation with a man slaughtering cattle for local consumption (not in Wisconsin), who draws his supply largely from cows turned off by the dairymen of a market milk district, it was asserted that over one-third, and probably one-half, of the animals slaughtered were tubercular. The statements made, which could probably be duplicated by the majority of local butchers, emphasize the need of local meat inspection.

Such animals are turned off by the farmer because, in many cases, they are unthrifty. The farmer thinks the cause of the unthriftiness is an inevitable one, and hence does not consider it as a preventable loss. Contagious abortion causes losses to which the farmer is awake. Tuberculosis causes greater loss as far as the individual animal is concerned because it destroys in great part the beef value of the animal, while abortion does not. The loss suffered is the difference between what is received for the animal and her value as a milch cow in either case.



One could imagine the success that would attend the sale of a lot of horses if the would-be purchaser knew that 50 per cent. were likely to be afflicted with an unsoundness that could not be recognized on a physical examination, but which was likely to ruin the animal as a work horse. Yet the spectacle is constantly presented of the purchase of animals from herds extensively diseased by men who know, or should know, the danger in such a procedure, even though such animals do not react. There is no doubt but that by the intelligent use of the tuberculin test, with all of its limitations, any herd can be freed from tuberculosis and the disease be prevented from entering a healthy one.

The handling of a herd from the standpoint of tuberculosis is the problem of the owner, and laws can do little, education can do much more, but to be effective the information imparted to the farmer and breeder must be the truth and the whole truth as far as present knowledge goes, and not statements that are not upheld by experience, and which cannot be proven.

**PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.**—Through the courtesy of Secretary Reichel we are able to announce that this association will hold its thirtieth annual meeting in Harrisburg on January 21 and 22, 1913, contrary to the usual custom of holding the annual meeting in Philadelphia and in March. The meeting will be held during the week of the meetings of the Pennsylvania Livestock Breeders' Association and the Pennsylvania State Dairy Union.

Aside from a good program which is now shaping itself, good reports are expected from the following committees: Committee on Medicine and Surgery, J. W. Adams, chairman; Committee on Milk and Meat Hygiene, L. A. Klein, chairman; Committee on Legislation, W. H. Hoskins, chairman. Members of the profession in Pennsylvania and surrounding states are cordially invited. Details of the meeting are being attended to by the following local committee of arrangements: T. E. Munce, chairman; J. H. Oyler, R. M. Staley, E. L. Cornman and R. C. Gross.

## **EPIZOOTIC EQUINE ENCEPHALOMYELITIS (BORNA DISEASE).\***

BY C. H. STANGE, DEAN DIVISION OF VETERINARY MEDICINE, IOWA STATE COLLEGE.

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During the month of August, 1912, there appeared among the horses of southwestern Kansas a disease presenting symptoms resembling forage or mould poisoning, *i. e.*, a severe affection of the central nervous system. From the point of origin the disease spread in an easterly and northeasterly direction to the major portion of Kansas, across Nebraska and into South Dakota on the north, and into Iowa and Missouri on the east. It required only about two months' time for the disease to spread to this extent and destroy about 30,000 or between four and five million dollars' worth of horses, it being fatal in over 90 per cent. of the cases.

Aside from the economic importance of devising some method whereby this disease may be controlled, it is of great scientific interest to determine the clinical symptoms, the pathological changes and, if possible, the etiology of this so-called Kansas horse disease, in order to determine its relationship to Borna disease, or epizootic equine encephalomyelitis, which is quite common in Europe, being known since 1813. Liautard is recorded as having observed sporadic and enzootic outbreaks in North America in 1869. In 1894 the disease acquired a wide distribution and a very virulent character especially in and about Borna (therefore the name Borna disease), in the eastern part of the province of Halle, Germany.

A considerable number of outbreaks of mould poisoning have

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\* Read before the twenty-fifth annual meeting of the Iowa Veterinary Association, at Ames, November 12, 1912.

NOTE—The above figures relative to the number and valuation of horses destroyed have been estimated as nearly as possible.

been investigated by the writer in the past five years, and while there is great similarity between the clinical symptoms of mould poisoning and the recent outbreak, there are, nevertheless, some very important differences in reference to the appearance and spread of the disease.

In all outbreaks of forage poisoning with which I have had experience and which literature records, we have practically all animals affected that partook of a certain mouldy food or of water from one source. This food or water in my experience has always been visibly affected by some fungus. This is notably true of silage, and feeding experiments with horses have substantiated our theory as correct. For more detailed information concerning a part of our work I refer you to my report as chairman of the Committee on Disease and Treatment, made before this Association four years ago, a part of which is as follows: "It remains to be shown whether all cases of cerebro-spinal meningitis are due to the same cause and resemble Borna disease." "It is apparent that mouldy food and water has caused several outbreaks in this country." Since making that report other outbreaks have been investigated, and there is no longer a question but that mouldy food may and does cause poisoning accompanied by severe nervous symptoms and is highly fatal."

An important feature of these outbreaks is that they were restricted to localities where certain conditions or fungi existed, and that practically all horses fed on the affected food were afflicted. This is in marked contrast to our recent outbreak, which sometimes affected one of a dozen animals kept under similar conditions and on the same food. In other cases it affected practically all the animals, including those at pasture as well as those that received no green food outside of possibly corn fodder or in some cases alfalfa hay of this season's cutting; also the disease was not restricted to any particular locality in which certain climatic or other conditions existed; neither did it follow any stream or streams of water, but spread across two states into three others in a direction opposite to which it would be expected to follow if the season, *i. e.*, climatic or vegetative

conditions were responsible for the cause (in this instance it should have spread in a southerly direction).

Borna disease usually begins with disturbed appetite, depression and drowsiness. Very soon other symptoms appear and in about the following order.

In reference to the digestive tract, most of the cases show increased or decreased appetite, eructation, difficulty in swallowing, icterus of the mucous membranes, disturbed defecation and abnormal consistency of the feces, sometimes accompanied by colicky symptoms.

In the nervous system we notice varying drowsiness, at times excitement, occasionally increased sensibility, more frequently, however, decreased sensation and attacks of dizziness. In addition there may be various nervous disturbances in some cases, shown by epileptiform attacks, madness, uneasiness, tendency to stumble or lie down.

Abnormal movements may be seen in practically all cases, usually incoordination, and very frequently animals move in a circle. A groping gait is sometimes seen. About one-half of the cases suffer a disturbance of the sense of localization and attention, and consequently are prone to collide frequently with objects. Quite often as a result of touching or during an attempt to lead the animals they go backwards, of their own accord, until stopped by some solid object.

There is a marked predisposition toward the existence of muscular spasms. They may appear in all grades, from fibrillar contractions to convulsions. The most frequent are the mild contractions, causing gnashing of the teeth. Very frequently there is a curvature of the neck toward the side. Moreover, the contraction of single muscles produces the most variable symptoms. For example, elevation of the lips or commissure of the mouth, trismus, dilatation of the nostrils. Prostrate animals may show swimming or paddling motions of the extremities.

Paresis and paralysis may affect certain regions singly or be combined, producing functional disturbances, and are found in practically every case. The dysphagia may be due to infiltration,

paresis or paralysis of the pharynx. The frequent disturbance in the nerves supplying the tongue, lips and muscles of mastication and deglutition, interfere with the nutrition and consequently cause emaciation. Paralysis of the muscles of the back and hind quarters, also the extensors of the limbs, cause stumbling and inability to rise, which hastens death.

The eye is frequently affected; icteric discoloration of the conjunctiva, or congestion, or a combination of the two, is seen in most cases. Pale or livid color or swelling is seldom seen. Keratitis is occasionally seen following traumatism. A fixed gaze, rolling, or oscillation of the eye-balls, are symptoms that may be seen in patients with affected eyes. Decreased pupillary reflex and unequal dilatation of the pupil is occasionally observed. In about 5 per cent. of the cases there is blindness due to amaurosis.

The circulatory apparatus is also frequently affected, indicated by increased frequency of the pulse, which in other cases may be sub-normal. The pulse in a very few cases may be weaker than normal.

During the course of the disease the respirations show various changes. Most frequently respirations are increased, but may be decreased. In a very small percentage of the cases, difficult, noisy respiration is seen. Respirations may be purely abdominal or wholly costal in type. About one-half of the cases show slight rise in temperature, which rarely goes above 103 degrees. The nutrition does not always suffer as a result of the disease, and great emaciation is seen in about 25 per cent. of the cases. Examination of the urine is negative, with the exception of those changes common to constipation, fever and retention of the urine.

Examination of the blood reveals a normal erythrocyte count and a slight leucocytosis.

According to Schmidt's experience 6.3 per cent. made a complete, 3.6 per cent. a partial recovery, but most of the cases die in from one to two weeks.

Considering the nervous disturbance according to the centers affected, we have the following conclusions: Depression, which



is one of the first symptoms, sometimes displaced by excitement, must be due to an affection of the cortex of the cerebrum, as this is the seat of consciousness. In most cases it is probably affected in localized areas. In diffuse affections, consciousness is permanently destroyed. The close connection between the cerebrum and the pia mater almost precludes involvement of the latter.

The abnormal sensation, which may be increased or decreased, is partially due to disturbed consciousness; however, in some cases it is purely reflex, in which case it indicates usually a pathological involvement of the spinal cord.

Dizziness is seen in destructive processes of the pons or the cerebellum, also in affections of the labyrinth of the ear, and finally in severe disturbances of consciousness.

Epileptiform attacks outside of those produced reflexly are usually due to irritation of the motor centers. Muscular spasms may be produced reflexly from the spinal cord, but probably originate in the medulla which contains the spasm center. Irresistible movements are due to irritation or diseased process in the sub-cortical layers. The walking or paddling movements performed while the animal is down are of cerebellar origin.

The ataxia which consists of faulty movements is a result of certain groups of muscles being no longer coordinated. They may be due to spinal, bulbular, cerebellar or cerebral involvement.

Paralysis is usually due to a localized affection, and the larger this area or the nearer it is to a point where the motor fibers come together, the more muscles are paralyzed.

The above detailed symptoms point definitely to the presence of diseased centers in the substance of the cerebrum, cerebellum medulla oblongata and the spinal cord, as well as in the cerebral cortex, while the meningitis which is usually localized is only of secondary importance. The question now arises whether or not the other symptoms harmonize with this affection of the central nervous system. The temperature may be influenced by an affection of the brain or medulla, by the spasms, or toxins acting on the heat centers. The pulse, which usually varies with the body temperature, may also be affected by disturbance of the vagus center and intra-cranial pressure.

Especially difficult to explain are the digestive disturbances. They were formerly supposed to represent the primary symptoms. This, however, is a mistake, as they are very closely associated with the nervous affection. The disturbed appetite is a result of altered consciousness; furthermore by the involvement of the muscles of mastication, lips and deglutition. The latter also causes the disagreeable odor from the mouth and the coated tongue. The other changes are due to disturbances of peristalsis, secretion and circulation of the gastro-intestinal tract. These motor functions are very easily influenced by the vagus, which may destroy digestion entirely, when the medullary center is involved.

The icterus may be of catarrhal origin, resulting from obstruction or on the other hand follow hemolysis.

Borna disease, therefore, must be regarded as a disease of the cerebrum, cerebellum, medulla and probably also the spinal cord. The cerebrum seems to be most severely affected, while the meninges may escape entirely or show simply localized areas.

Pathologically, Borna disease is an acute, disseminated, infiltrative, non-suppurative meningo-encephalitis and myelitis of lympho-cytic type and principally of a mesodermal (vascular) character (Joest and Dengen).

Histological examination of the pia mater shows a slight meningitis of mononuclear type, insignificant, however, as compared with the changes in central nervous system.

The vessels of the nervous tissue of the brain (and to a certain extent spinal cord) show a pronounced inflammatory infiltration of the adventitia and to a certain extent the peri-vascular lymph space. The cellular infiltration consists chiefly of lymphocytes, in addition some polyblasts and various other cells, but very few or no polymorpho-nuclear leucocytes. In addition to this perivascular infiltration we also found areas of degeneration varying in size, but the largest scarcely visible to the naked eye. These areas appeared as unstained fields, and where the process was most advanced, the tissue structure could not be recognized. In other sections the process was in the initial stage and could

only be recognized by a failure to stain properly. Therefore, when the actual condition is considered, the disease should be called epizootic equine encephalomyelitis.

A clinical diagnosis is not always easily made, because the clinical picture is not always well defined, especially during the first few days. The symptoms of special importance are those of a nervous character, which indicate, in addition to an affection of the brain, involvement of the cervical and spinal cord. These are muscular spasms, including fibrillar contractions, spasms of the neck, difficulty in swallowing, yawning, gnashing of the teeth and trismus. Also hyperesthesia and ataxia. On the other hand, disturbances of consciousness, staggering, swaying of the hind quarters and involuntary movements may be seen in ordinary meningitis. Furthermore digestive disturbances and icterus must be included in a typical picture. The condition of the temperature, respiration and pulse is not significant in the diagnosis. The epizootic character of the disease is, however, significant. In those cases that do not show the usual symptoms, it very readily becomes atypical, and a diagnosis may become difficult.

According to Schmidt, there can be no doubt but that the disease is infectious, but is not transmitted from animal to animal. In regard to the etiology I venture to say that the relation of the cocci and the diplococci that have been described in this connection has not been sufficiently well established to be accepted as true factors. Culture media, carefully inoculated with material from subarachnoid fluid, brain tissue, lateral ventricles, mucous membrane of ethmoidal cells and heart blood, remained sterile, with the exception of one tube inoculated from the lateral ventricle of a brain, which, however, is not significant on account of the fact that the brain was carried from Nebraska to Ames before the inoculation was made. Neither did microscopic examinations of the fluids, from which cultures were attempted, reveal variations from the normal. According to the investigations of Joest and Dengen, there are intracellular bodies frequently found in the ganglion cells, which may be of animal origin. The theory of Ostertag and others that the infectious agent may be found in

the water and in the ground, and may be carried to the animals with the food stuffs, seems plausible. The idea, however, that the catarrhal condition of the digestive tract affords the port of entry for the causative factor needs to be demonstrated, because, although the affections of the gastro-intestinal tract are early symptoms, nervous symptoms appear simultaneously, or in a very short time. It is reasonable to suppose that if the catarrhal condition of the digestive tract predisposed to the infection that there would be a period of time elapsing between this and the nervous symptoms. In other words, a period of incubation. In all probability, the affection of the digestive tract is but a part of the symptoms complex of the disease in its development. According to investigation of Joest, the olfactory nerve may act as a port of entry for the infectious material.

We must remember the possibility that the earth may be a potent factor in distributing the infectious agent, as it may be taken up by the wind in the form of dust, and in this way taken into the nasal cavities by the horses. This, it seems to me, might explain also why horses in the rural districts are most frequently affected, while, if the food acted in the capacity of carrying the infection, outbreaks in the city would be more frequent. In Schmidt's experience over 80 per cent. of the horses affected came from the rural districts. Also most of the cases were seen in the months from March to September. He suggests that the cold weather reduces the pathogenic properties of the infectious material. So long as the actual cause is not known, the agency of the dust and the wind must be considered, inasmuch as the recent outbreaks spread from southwestern Kansas in a northerly and northeasterly direction with our prevailing winds over the states of Kansas, Nebraska and into South Dakota and Iowa.

The age seems to have but very little influence. The same is true of the sex. The only predisposing factor seems to be that horses are kept in rural districts.

The most important factors to be considered in the treatment of this disease are hygienic and dietetic in nature. Of 415 typical cases treated by Schmidt, the greatest percentage of

recoveries was obtained by observing dietetic indications, with cold applications to the head, massages, bleeding and purging, but he states that this line of treatment was very frequently applied with no apparent beneficial results. He also, in addition to 35 different lines of treatment with drugs considered specific for nervous affections, tried the serum of horses that had recovered. This he did, admitting the fact that a natural immunity is not developed as a result of an attack and did not receive apparent relief in a single case. It is, so far as we know at the present time, possible to ascribe curative properties to no drug. Considering the pathological changes, it is difficult to imagine a drug that could possess these properties.

Prophylaxis is very difficult, so long as the cause and mode of infection are not known; even granting that the inhalation theory is correct, it would be very difficult or impossible to devise a method by which horses in our rural districts could be protected. Even the withdrawal of all kinds of green food and newly made hay is practically impossible with a large majority of our equine population.

While we can no longer debate the question as to whether mouldy food may cause poisoning in horses, with symptoms similar to those described above, we, nevertheless, cannot assume for a moment that it is the one and only factor that may produce a disease presenting similar symptoms. This is especially true because of the fact that the symptoms are of a nervous character. Clinically and pathologically, we have been unable to distinguish the disease which invaded our central western states with such disastrous results, and which has scarcely died out from the disease described in Europe and commonly known as Borna disease. So long as the etiology remains in doubt, there will be more or less discussion as to its exact nature and will be confused with sporadic outbreaks of forage or mould poisoning, to which it is related in my estimation only in that it presents a similarity in symptoms. Therefore I repeat the suggestion made at a conference of veterinarians at Lincoln, Nebraska, in September, that the recent outbreak be known as epizootic equine encephalo-



myelitis. This would be at least in accordance with the pathological anatomical features so far observed.

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THE MISSOURI VALLEY VETERINARY ASSOCIATION.—In our December number, on page 324, we announced the meeting of the above association at Kansas City, and gave the tentative dates as January 22-23-24, promising to confirm or correct the same in our present number, those being the dates as nearly as the secretary of the association could approximate them at that time. We are now in a position to state the correct dates, which are, January 21-22-23, 1913 (beginning one day earlier than formerly announced), and to give our readers a little inkling as to the program they may look forward to, as follows: "Surgical Treatment of Bone Spavin," R. R. Dykstra; discussion opened by J. S. Anderson, F. P. Brown and H. E. Bemis. "The Recent Horse Plague," A. Bostrom; discussed by John R. Sprague, K. W. Stonder, B. F. Kaupp, C. H. Stange, B. A. Robinson and A. T. Kinsley. "Embryological Operations, Etc.," J. V. LaCroix; discussion by J. E. May, J. H. McLevey, Roy Lovell, Geo. T. Jungerman, D. H. Miller and W. A. Heck. "Contagious Abortion," B. F. Kaupp; discussed by H. F. Palmer, M. H. Reynolds and J. I. Gibson. Amongst many other features of the clinic will be demonstrations of "scabies" in different animals. Many other papers and the "Question Box" will surely round out a most excellent program. A banquet will be held at the Coates House on one of the evenings, and entertainment will be furnished for the ladies.

CONFERENCE FOR VETERINARIANS AT ITHACA.—The annual conference for veterinarians at Ithaca will be held this year on Thursday and Friday, January 9 and 10, at the New York State Veterinary College. Director Moore extends an invitation to every veterinarian in the Empire State to be present and participate.

APPRECIATES THE WIDE SCOPE OF THE REVIEW.—An Ohio subscriber writes: "In my estimation the REVIEW is indispensable to the practitioner, teacher and laboratory expert."

## IMMUNIZATION AGAINST HEMORRHAGIC SEPTICEMIA.\*

BY JOHN R. MOHLER AND ADOLPH EICHORN, WASHINGTON, D. C.

The term hemorrhagic septicemia was first applied by Hueppe, in 1886, as a collective name for all those diseases which were caused by the ovoid bacterium, the *Bacillus bipolaris septicus*. The designation of Hueppe included chicken cholera, rabbit septicemia, hemorrhagic septicemia of cattle and swine plague as the original group. Later investigation proved that there are a number of other infectious diseases in animals, which, directly or indirectly, are etiologically identified with the *Bacillus bipolaris septicus*. Thus, this organism was found to be responsible for the buffalo disease (so-called Barbone), infectious pneumo-enteritis of sheep and the infectious pleuro-pneumonia of calves. This enumeration of diseases does not embrace all affections in which this germ is involved, as there are other infectious maladies, such as influenza of horses, catarrhal pneumonia of calves and distemper of dogs, in which the ovoid bacterium is held to be an important factor. Its association with the latter diseases, however, has not yet been satisfactorily established; nevertheless it is known that some of the pathological changes observed are caused by this micro-organism, and at least it must be considered in these instances as a secondary invader.

All species of domestic animals are susceptible to the infection, although the pathogenic action of the organism for a certain species is usually higher than for other species, and under certain conditions may even be absent; nevertheless it is known that under appropriate conditions the organism may gain in virulence and become a typical pathogenic agent for any of the species. Thus it has been observed that after an outbreak of hemorrhagic septicemia in cattle, hogs have become affected with swine plague

\* Presented at the meeting of the United States Live Stock Sanitary Association, Chicago, December, 1912.

on the same premises, and likewise the disease in sheep has developed subsequent to an infection of hogs.

It is therefore apparent that the group of these diseases is caused by the same germ, which possesses only a variance in virulence for the different species of animals. This fact is also substantiated by the morphological and biological characteristics of the germ.

These ovoid bacteria live as saprophytes, but under the influence of certain conditions they become parasitic, in which state they sometimes attain a very high virulence. After some generations they gradually lose their parasitic nature and return to their original saprophytic state. As parasites, in their passage through the animal body, they show certain characteristics, as a result of which they are known as a variety of the *Bacillus bipolaris septicus*. Thus, as a rule, the diseases of the different species of animals are caused by these specific varieties, viz., the hemorrhagic septicemia of cattle by the *B. bovissepticus*, swine plague by *B. suissepticus*, chicken cholera by *B. avissepticus*, the disease in sheep by *B. ovisepticus*, etc.

These varieties, however, have a common saprophytic origin, which justifies their being grouped into one family, and all diseases caused by micro-organisms with the following characteristics should be included in this group: Ovoid bacteria without motility, gram negative, polymorphous with involution forms. They do not liquefy gelatine and do not coagulate milk, nor change its reaction. The bouillon cultures have a peculiar odor. On acid potatoes they form no visible growth, and in pancreatic bouillon no indol is formed; they are usually erobic, but may grow anerobically. They produce no spores and have no flagellæ. They possess a greatly varying virulence, which is usually very high. These specific characteristics are invariable, and the absence of any of those enumerated would exclude the organism from the hemorrhagic septicemia group.

The group relation of the organisms of this family is also substantiated by the following observations: Chickens may be immunized against chicken cholera with cultures of the rabbit septi-

cemia organism with the same satisfaction as with the attenuated cultures of chicken cholera (Kitt). Likewise Jensen immunized chickens against cholera with the bacteria of calf septicemia. Mayr and Kitt immunized rabbits against swine plague and chicken cholera with sera of the latter diseases. Perroncito produced a fatal septicemia in calves with inoculations of the swine plague organism. Galtier found swine plague bacteria infectious for sheep, goats, calves and horses. Voges has even succeeded in producing a disease as fatal as cholera in chickens by feeding them swine plague bacteria. Further it has been proven that, in spontaneous outbreaks, hogs may become affected with the virus of chicken cholera. Finally, Lignieres, in his exhaustive experiments, proved the virulence of the hemorrhagic septicemia organism for all domestic animals, in which the most varied clinical picture may result from the infection.

These, together with the findings and observations of other investigators, have established the close relationship of the different varieties of organism of this group. Moreover, through this knowledge it has been possible to prepare a polyvalent vaccine from the different varieties, which gave satisfactory results in the combatting of outbreaks and which is still being recommended and employed in various localities.

Immunization against various forms of hemorrhagic septicemia has engaged the attention of numerous investigators since the time the causative factor was identified. Pasteur was the first to work out a method for immunization against chicken cholera, which, however, failed to come up to the desired expectations. He employed for the immunization an attenuated culture of the chicken cholera organism. The attenuation was accomplished by exposing the cultures to atmospheric conditions for a certain length of time. He found that cultures subjected to these conditions lost their virulence to a certain degree if they were then cultivated at body temperature. The material obtained from this attenuation was then used for the immunization against chicken cholera. The failure of this method in practice can be attributed chiefly to the fact that cultures exposed to this method of attenua-

tion will not in all instances produce a uniform product, and therefore it can be readily understood why in some instances great losses were sustained from the use of such vaccine.

Later, other investigators prepared vaccines for the immunization of the different varieties of these diseases, and while the results were encouraging, they have not in all instances succeeded in their purpose. Lignieres' method appears to have been the most satisfactory, and its utilization in practice has also been probably more extensively adopted than any of the other methods. The method of attenuation he employed consists of growing the cultures of the respective organism at 42 to 43 degrees C. and preparing from the cultures grown at this temperature two different strengths of vaccines. The weaker vaccine is grown for five days at this temperature, whereas the stronger vaccine for the second injection is grown for only two days.

Kitt was the first to establish that the attenuated vaccine prepared from one of the varieties of the germ may also prove effective against other varieties. The proof of this fact is of very great importance in the control of the disease, since it may not make material difference whether the vaccine used originates from the bacteria of the particular variety it is desired to immunize against or another variety. Thus it is possible to immunize chickens against cholera with the vaccine prepared from the organism producing rabbit septicemia.

On the other hand, it must be recognized that immunization against a disease of this group cannot invariably and uniformly be successful with vaccines from another variety of the disease, and it should therefore be considered that the best results can only be expected when the vaccine is prepared from the organism of the same variety. Hence, in all cases where it is possible to employ an autogenic vaccine, such should be used. The preparation of the polyvalent vaccine is highly recommended by Lignieres, and according to his experience it may be used with satisfactory results in practice. The polyvalent vaccine is prepared from a mixed culture of the hemorrhagic septicemia organisms, originating from sheep, cattle, dogs, horses, hogs and



chickens. The culture is grown under the attenuating influences of a high temperature, as described above. The practical application of the polyvalent vaccine is at the present time receiving the recognition of certain workers in the control of the disease among various species of animals.

The serum immunization against these diseases has also been investigated quite extensively. Potent sera can be prepared which will have an immunizing effect against the respective disease, but the application of this method of immunization in practice has not proven practical, since a serum inoculation produces only a passive immunity, which conveys to the animals a resistance that remains for only a relatively short period.

In consideration of the laborious task of preparing a horse to furnish the potent immunizing serum and also the length of time which this preparation requires, one can readily see the advantage which would be derived from a vaccine in preference to an immune serum. This feature was particularly emphasized in a recent experience, where it was necessary to immunize animals within the shortest possible time, in order to prevent further losses from the disease in a buffalo herd.

In the following report our experience with vaccine immunization against hemorrhagic septicemia is described, and in consideration of its success, further applications of this method in outbreaks of hemorrhagic septicemia among other species seem advisable.

#### HEMORRHAGIC SEPTICEMIA OF BUFFALO (BARBONE).

During the month of December, 1911, the Department of Agriculture received information from the Department of the Interior of the existence of a fatal disease in the buffalo herd in the Yellowstone National Park, with the request that an expert be sent to make an investigation of the disease.

Dr. E. J. Cary, veterinary inspector of the Bureau of Animal Industry, was detailed to carry out the investigation at the park. In all, twenty-two animals died between December 3 and December 15, young animals especially being victims of the disease. The symptoms, and particularly the post-mortem findings, were

confusing, and it was therefore deemed advisable to forward some of the tissues for diagnosis to the Pathological Division. The bacteriological examination as well as test inoculations proved an infection with hemorrhagic septicemia as the specific micro-organism (*Bacillus bipolaris bubalisepticus*) was isolated from all tissues, and test animals which were inoculated with material from the specimens died of typical hemorrhagic septicemia, the specific organism being also recovered from the blood of these animals.

This disease of buffalo, known also as barbone, was first recognized in Italy, in 1886, while three years later its presence was established in Hungary. No previous outbreak of barbone has been recorded in this country. In Russia, Egypt, Indo-China and the Dutch West Indies the disease occurs frequently in enzootic form, and in the latter place over 11,000 buffaloes succumbed between 1888 and 1891. It usually appears as a disease of the soil in marshy pastures where large numbers of buffalo are kept. Its appearance in such a remote and isolated place as the Yellowstone Park, however, is difficult of explanation, although the bacilli are known to be widely spread in nature and to occur not infrequently in the digestive tract and air passages of healthy animals. As a result of certain unknown conditions, which might include those influences that weaken the resistance of the tissues, as exposure, starvation, anemia, etc., the bacilli become virulent and produce characteristic lesions. It is not an uncommon experience with hemorrhagic septicemia to have it appear periodically in certain localities, without any apparent connection to which the introduction could be traced. The appearance of the disease in sheep reported by Ward in Minnesota might have some bearing on the disease in Wyoming, but if so it would probably be through birds of prey such as buzzards and hawks.

The authorities in charge of the buffalo herd at the Yellowstone Park were immediately notified of the nature and cause of the infection among the animals and preventive measures were recommended for controlling the spread of the disease. At the

same time it was deemed advisable to undertake the vaccination of the entire herd with bacterial vaccines prepared from the recovered organism. For this purpose two vaccines were prepared of different strength. The vaccine for the first inoculation was prepared by growing the organism five days at  $42.5^{\circ}$  C., while the vaccine for the second injection was cultivated in the same temperature for only two days.

For the preparation of vaccine Erlenmeyer flasks of pepton bouillon media were inoculated with the organism after it had been cultivated for several generations on agar, and the bouillon cultures were then placed under temperature conditions stated above. The straight attenuated culture after thorough shaking was used for vaccinations in some of the animals, while others received the same vaccine to which one-half of one per cent. of carbolic acid had been added. This was undertaken in order to determine whether the preserved vaccine possesses the same immunizing qualities as the unpreserved material.

Two varieties of the hemorrhagic septicemia organisms were utilized for the preparation of vaccine, the one strain representing the germ isolated from the buffalo disease in the Welloystone National Park, while the other was a variety of hemorrhagic septicemia of cattle isolated from animals which died of that disease in Colorado. The vaccines prepared from these two varieties were tested for their potency on laboratory animals and also on sheep, a comparison of the action of the two different vaccines being carefully made.

The virus isolated from the buffalo disease was especially virulent for rabbits. Inoculations of these animals with 1 c.c. of a suspension of salt solution containing only one-fifteenth of a loopful of bouillon culture killed the animals in from 12 to 18 hours, while one-twentieth of a drop of blood from rabbits dead from the disease was fatal to other rabbits in less than 24 hours on subcutaneous inoculations. The virus of the cattle variety was not as virulent, although test animals succumbed to subcutaneous inoculations on the third day, showing on post-mortem examination the characteristic manifestations of the disease.

Both strains of vaccines were employed in parallel tests on a group of rabbits and also at the same time on sheep. For immunizing purposes subcutaneous injections of the vaccines were given to the animals at ten-day intervals. For the first vaccination the more attenuated, and for the second vaccination the less attenuated vaccine was injected. The injections invariably were made subcutaneously on the inside of the thigh. The dose for the rabbits was .2 c.c. per injection, while the sheep were given .7 c.c. of each vaccine. Likewise another series of animals was tested, using the same amount of a vaccine which was preserved with 0.5 per cent. carbolic acid.

On the sixth day following the second inoculation the immunized animals were given a subcutaneous injection of the pure culture of the organism. Those which were immunized with the buffalo variety were injected with the virulent culture of this organism, while the others received the cattle variety. At the same time check animals which were not immunized were employed for each group and these were injected with the same quantity of virulent culture as given to the immunized animals. The immunized rabbits failed to show any indication of disease from the injection of the virulent culture, while the control animals succumbed in the usual time. The same results were noted in the sheep, although one of the immunized animals showed a slight elevation in temperature which, however, subsided after one day. On the other hand, the control animals of this group succumbed to the infection with typical symptoms and lesion of the disease. The fact that the animals immunized with the carbolized vaccine showed the same immunity as those immunized with the straight attenuated cultures is an interesting feature of this experiment, and while this condition appears at first hand to indicate the advantage from the use of the preserved vaccine, subsequent complement fixation tests undertaken on these immunized animals showed that those animals which were immunized with the straight vaccine gave a partial fixation of the complement for a much longer period than those which were immunized with the carbolized vaccine.



The results of these tests further substantiate the view that the vaccines of one of the varieties of the organism are potent against diseases produced by the other varieties of the germ. Thus rabbits and sheep were successfully immunized with the vaccines prepared from the *Bacillus bubalisepticus* and the *Bacillus bovissepticus*.

After obtaining these favorable results the vaccine was sent to the veterinarian entrusted with the vaccination of the buffaloes, and instructed to vaccinate all animals of the herd by the same procedure at ten-day intervals. One cubic centimeter of the vaccine constituted a dose for each animal.

Following vaccination, the herd was carefully observed and no immediate effects were noticed from the vaccination, and up to the present time there has been no indication of the recurrence of the disease among the buffaloes.

In the progress of the preparation of the vaccine experiments were also conducted in the laboratory to determine whether the complement fixation test could be applied for the diagnosis of the disease, and also for the purpose of determining the relative degree of immunity conferred upon the vaccinated animals in artificial immunizations. An antigen was prepared from the original organism recovered from the outbreak among the buffalo in the form of a shake extract. The hemolytic system consisted of sensitized rabbit serum (amboceptor), guinea-pig serum (complement), and washed sheep corpuscles. The test was employed with sheep serum and rabbit serum of artificially infected animals, and the results proved entirely satisfactory. A complete fixation was obtained in all instances when applied to 0.1 c.c. of serum of infected animals, while the controls showed no fixation whatsoever.

After the vaccination of the sheep and rabbits, blood serum was obtained from these animals and tested with the complement fixation test. The results in these instances also showed a fixation of the complement, although not as complete as in the infected animals, nevertheless showing that the animals responded after vaccination with the production of immune bodies. This



reaction has been noted even three months after the vaccination, and the testing of the blood will be continued from time to time in order to determine the length of the period in which the animals possess immune bodies subsequent to vaccination.

The utilization of the complement fixation test in the diagnosis of hemorrhagic septicemia, and also its value in determining the relative immunity established by vaccination, is of great importance, not alone in this disease, but also in the possibility of its utilization for other diseases.

PHYSICIANS AND VETERINARIANS A UNIT IN PREVENTIVE MEDICINE.—The following letter from past-President De Vine of the United States Live Stock Sanitary Association, expressing approval of and perfect accord with the sentiments expressed in the address of his successor, Dr. Ravenel, seems to so clearly demonstrate the views that each personally advocates, the one being a veterinarian and the other a physician, that we have taken the liberty of reproducing it. Dr. De Vine says:

"President Ravenel's address was extemporaneous and his remarks were chiefly concerning the relation of bovine to human tuberculosis and the great importance of bovine tuberculosis as a public health problem. He cited the findings of the Royal Commission in which it was clearly shown that bovine tuberculosis is transmitted to mankind, even the pulmonary form in exceptional cases; also the very valuable report of Dr. Park on the same subject. In fact his remarks up to this point were practically identical with the subject as I gave it in my annual address this year at our State meeting (New York). He further pointed out the necessity of the union of the medical and veterinary professions on health problems and stated that at the last meeting of the National Society of prevention of tuberculosis, of which Dr. Ravenel was President, that resolutions were passed inviting members of the veterinary profession to join the society and take part in the program; he also advocated the union of the professions under one Federal head to deal with national health problems.

"Following Dr. Ravenel, Dr. Geo. B. Young made a short and sincere address of welcome showing plainly his knowledge and sympathy of the work we are engaged in. Dr. Bahnson the Southerner, who can make more faces telling a story and do it right than any man I ever saw, responded in his usual way by putting facts so that they sounded as pleasing as fiction; until he reached the statement which to most Northerners was startling when speaking of Southern cattle fever; he said the cattle tick cost the Southern States \$15,000,000 by death and approximately \$100,000,000 by loss of commerce with other states annually, and that with our present knowledge of the life and methods of destruction of the tick, that eradication could be made possible and positive for the expenditure of a quarter of the amount of the annual loss, if war against the ticks were waged intelligently and persistently for a few years. He says that the presence of the ticks is entirely due to the indifference of the people and the lack of application of regular dipping of the cattle which is now the key of solution."

## SOME OF THE MORE IMPORTANT INSECTS AFFECTING OUR FARM ANIMALS.\*

BY W. H. DALRYMPLE, M.R.C.V.S., LOUISIANA STATE UNIVERSITY.

The subject is such a comprehensive one that it would be a physical impossibility to more than scratch the surface, so to speak, in the time usually consumed in an ordinary paper, and even then I am afraid I will have to boil the subject-matter down to the limit of a synopsis, rather than anything approaching an exhaustive treatise, as, within the past decade or two, insect life has been found to play a much larger part in the transference of disease than was hitherto even dreamed of.

Many years ago I personally had gained the impression that as time went on it would be found that insects, especially flies of different kinds, were responsible for the conveyance of many of the communicable diseases, but which at the time had, perhaps, not been suspected, or at least the suspicion had not gained very wide publicity. Perhaps I was led to this impression through my connection with anthrax in the lower Mississippi valley and its widespread character in certain seasons, particularly those in which tabanids, or horse-flies, were exceptionally numerous.

True, the horse-fly had been credited with the causal agency of this disease, but the erroneous idea prevailed that the disease originated wholly with the fly and that it was the sole cause of the ailment rather than the mechanical transmitter of the *bacterium anthracis*.

Our impression at that time, with regard to insect transmission, seems to have been more or less verified in the numerous diseases that are now known to be dependent for their spread upon flies and other dipterous insects, either as mechanical transmitters or as obligate hosts of some of our most important disease-producing organisms.

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\* Paper presented at the thirtieth anniversary of the Illinois State Veterinary Medical Association, Chicago, December 6, 1912.

I do not wish you to get the impression that it is my desire to pose as a professional entomologist. You are all well aware that this branch of science is one to which an individual must devote his entire time, in fact his life, in order to become at all proficient. Consequently, while I have been able to embody some of my own personal experiences and observations in the makeup of this paper I have been forced to draw copious draughts from the fountain of knowledge acquired by those who have made a special study of insect life in its different phases.

It is not my purpose to go into a systematic grouping of parasitic insects, as this would occupy much more time than I have at my disposal, nor do I think it at all necessary in a paper of this kind. I believe that the selection of one or two of the more important orders, with a few of their families, will be all that we will be able to cover at this time; and the first which I propose to discuss is the order diptera, which includes flies, gnats, mosquitoes and pseudo-ticks.

The insects of this group are readily distinguished by their having only one pair of wings, the second pair, common to other insects, being represented by a pair of rudiments or modified structures called halteres or balancers.

In many of the parasitic forms, however, the wings are entirely wanting, as in the sheep tick (*melophagus ovinus*), etc. They have suctorial mouth parts, and in the forms attacking the various animals these parts become readily adapted to penetrating the skin in order to reach the small blood-vessels.

The larvæ are fleshy grubs, or maggots, or slender worms adapted in the different families to widely different conditions of existence, but in nearly all cases requiring some degree of moisture.

In this respect they range all the way from the entirely aquatic mosquito larvæ to the forms which mature in comparatively dry situations in earth, or even upon plants.

The pupæ are, in some cases, formed by the simple contraction or hardening of the larval skin, and in disclosing the imago may either split on the dorsal surface or in a circular manner, so

that a cap is separated from the head end, leaving a round aperture through which the adult emerges.

While comparatively few are parasites in the strict sense, the group includes many of the most troublesome of the insect enemies of live stock.

Muscidæ is the family of diptera to which our common fly belongs, and I have thought it might not be out of place to briefly consider that pest, to both man and beast, as well as a carrier of disease germs of no mean ability—the common house fly (*musca domestica*).

It is claimed by entomologists that the egg-mass of the female house-fly will contain about 120 ova, and that a single fly will lay four such batches of eggs. The life cycle of this fly is ten days, and in the latitude of Washington, D. C., for example, according to Dr. L. O. Howard, Chief of the Bureau of Entomology, the generations will number twelve or thirteen in a single season. In the longer warmer seasons, such as we have in the more southerly part of the country, the number of generations are, no doubt, considerably increased.

We are all familiar with the great prominence this pest has gained in recent years in connection with the transmission of some important disease of the human family, such as typhoid fever, dysentery, infantile diarrhœa, etc. However, in the case of animals, apart from its irritating and annoying effects, it may not have been reckoned at its true value as a transmitter or carrier of some of our most fatal infections.

Only recently at the Louisiana station we have been able to verify, to some extent, at least, the veracity of this statement during the course of some experiments with possible carriers of anthrax infection. Dr. Harry Morris, assistant veterinarian and bacteriologist of the station, when posting a guinea-pig that had died of anthrax, observed a common house-fly feeding upon the viscera in the abdominal cavity of the pig. Having a petrie dish with agar medium convenient, he succeeded in getting the fly on to the culture medium in the dish; and after incubating this for a period of 24 hours, there could be seen colonies of

anthrax organisms at every point the fly had touched with its feet.

Here then was a case of infection by simple mechanical transmission. But another test was made of a somewhat different character. A fly that had been fed virulent anthrax culture in a large wide-mouthed bottle was transferred at intervals into three other sterile bottles in order to prevent contamination, and from the side of the last bottle a single fly-speck was carefully transferred to fluid agar, shaken up and further transferred to a sterile Petrie dish. This was incubated for 48 hours, with the result that the entire field was covered with anthrax colonies.

From the above-mentioned tests it may readily be inferred how the common house-fly may not only be the mechanical bearer of this death-dealing infection on its feet and the hairy under-surface of its body, but carry in its dejecta and deposit, when nature calls, the organisms of this disease, which is often so fatal to both man and beast in various parts of the country. And if this is possible in the case of anthrax, may it not also be so in hog-cholera and other diseases of animals that have not as yet been fully investigated in this connection?

In dealing with this fly it is necessary, of course, to get at its breeding places and endeavor to destroy it in the egg and larval stages. It breeds chiefly in horse manure, although it may be found in trashy places about yards, in closets, etc. This would suggest, therefore, the treatment of manure, when practicable, with some effective inexpensive insecticide, such as chloride of lime, its removal at the earliest possible moment, sanitary cleanliness generally, and the screening of stables, when that can be accomplished.

Another representative of this family is the stable-fly, biting or stinging fly (*Stomoxys calcitrans*).

To the uninitiated, this fly so closely resembles the common house-fly as to be considered one and the same, only they (the uninitiated) are at a loss at times to understand why this fly should get fits of biting or stinging. This, however, is an error, as the two are quite distinct.



This is a well-known species, is widely distributed, and is a familiar pest in many countries. It is said to have been described by Linnaeus in 1761. Its bite is severe, a great amount of annoyance is caused by it to our domestic animals, and it is frequently very troublesome to people working in the vicinity of where it abounds. In fact, it was announced by Prof. M. J. Rosenau, of Harvard University, at the recent International Congress on Hygiene and Demography in Washington, D. C., that he had apparently succeeded in transmitting poliomyelitis, or infantile paralysis, from sick to well monkeys by the bite of this fly. Dr. Rosenau concluded from his experiments that after the virus of poliomyelitis is taken into the body of the fly by biting an infected person or animal some time must elapse before the fly is capable of transmitting the disease, and that the period which must elapse is probably less than 21 days.

It would seem that this fly appeared in great numbers in different parts of the country during the present year and occasioned considerable damage. Mr. Bishopp, assistant in the Southern Field Crop Insect Investigations in Texas, kindly furnished me a memorandum of some of its depredations. It seems to have appeared in great numbers in the north-central part of Texas and certain parts of southern Oklahoma, also in Kansas and Nebraska. It is difficult, says Mr. Bishopp, to estimate the loss chargeable to this outbreak. The loss due to the death of cattle, mules and horses was by no means inconsiderable, probably 300 head would be a conservative estimate, the greater number being among cattle. Many of the deaths, however, were only indirectly due to the fly, among which might be mentioned run-aways caused by the irritation of the bites. One of the most important indirect losses was caused by the inability of the farmers to make fall preparation for their winter wheat at the proper time, as it was frequently impossible to work their animals in the fields during the daytime. In the case of dairy cows, the great loss was due to the reduction of the milk supply. This reduction ranged from 40 to 60 per cent. in many herds. And there was also a corresponding falling off in the weight of animals everywhere throughout the afflicted districts.

Prof. Herbert Osborn, of Ohio, and others state it is especially charged against this species that they have been the means of transmitting anthrax and possibly other diseases among cattle.

This author also mentions that this fly is not confined to stables or other quarters of domestic animals, but occurs frequently in shady places, groves, and in dwellings, especially in cloudy weather. It is claimed, however, that the species has been reared with others from horse manure, and it may be considered as established that the eggs are laid in manure, and the larval stages passed there, requiring greater or less time for their development, a number of generations being produced each year.

The prompt disposal of stable accumulations would, therefore, assist greatly in reducing the numbers of this pest. For if, as Dr. Rosenau states, the virus of poliomyelitis has to remain in its body for a length of time before it is capable of transmitting the disease; and the further fact, according to Curry, in Manila that it is the principal agent in the transmission of the trypanosome of surra, it is possible that we have in this fly a carrier which is much more dangerous than has hitherto been suspected.

Another important member of the family Muscidae is the horn-fly (*hæmatobia serrata*).

This is one of the worst of the European biting flies that attack cattle, but notwithstanding the large number of importations of live stock from that continent to this during nearly three centuries it was only discovered and reported to the U. S. Bureau of Entomology in the fall of 1887 as occurring near Camden, N. J. The following year it appeared in Maryland and Virginia, and by 1891-1892 it was found over the continent from Canada to Texas and from Massachusetts to the Rocky Mountains. In 1897 it was carried with cattle from the Pacific coast to Honolulu, and from there spread to all the islands of the Hawaiian group.

During the past summer this fly has been exceptionally abundant in the Gulf States and, presumably, in other sections of

the country, and the damage done has necessarily been proportionate to the numbers of the insect.

Being a blood-sucker, the chief damage is occasioned as the result of irritation, preventing proper feeding and the normal assimilation of food and, in consequence, the loss of flesh or lessened milk production. There is also, of course, the actual loss of blood, which may be quite considerable when these flies are abundant, as they have been the past summer. And we in Louisiana are somewhat suspicious that during outbreaks of anthrax they may, as mechanical transmitters, be factors in the spread of this infection.

Except when these insects are in great abundance they seem to have a preference for dark-colored cattle, or the dark portions of the same animal that may have both dark and light patches, such as the Holstein. This is no doubt due to mimicry, or the natural instinct to protect themselves by taking advantage of the color of their surroundings being similar to their own.

When feeding, the horn-flies generally attack the sides of the chest and other parts where it is difficult for the animal to reach with head or tail; and when disturbed on one side, they move over to the other, and keep this up until they become satiated, and the animal frequently worn out by its almost constant efforts to rid itself of the pest.

In the resting stage, the flies frequently cluster around the base of the horn, in horned cattle—hence the name, horn-fly.

According to Marlatt, the egg-laying habit of this insect was not easily discovered, and is somewhat peculiar. The eggs are laid singly, and usually upon their sides on the surface of wet cow manure. So far as is known, they are laid upon no other substance, and never upon old droppings. The moment the manure is dropped, a swarm of flies dart from the animal to the manure and remain there a few seconds, or a minute at the most, during which time many eggs are deposited. Egg deposition is chiefly during daylight, and most abundant during the warmer morning hours.

The larvæ upon hatching descend into the manure, remaining,

however, rather near the surface. The puparium, or pupa, is found in the ground underneath the droppings. The time elapsing from the egg to the adult is from 10 to 17 days, and in the latitude of Washington, according to Marlatt, there are probably seven or eight generations annually, with more in the South, and continuous breeding in tropical regions, like the Hawaiian Islands.

Studies of the winter habits of this insect would indicate that hibernation takes place either in the adult stage or in the pupa below the surface of the ground.

It seems to have been established by the Bureau of Entomology that some of the natural enemies of this fly have been discovered.

However, the simplest practical method of control, so far as we are concerned at the present time, would seem to be the destruction of the larvæ and pupæ in the cattle manure by direct measures, the protection of cattle by suitable repellents, and the actual destruction of the adult flies.

Since using the alkaline arsenical solution for the destruction of cattle ticks in the South, it is found that great numbers of these flies hang on to the animals and are killed in the ordinary process of dipping in the vats. But while myriads of adult flies are destroyed in this way, dipping for tick destruction is only practiced every 14 to 21 days during the season, leaving too great an interval between to be of the greatest practical service. Consequently, some additional method should be adopted that could be practiced at short intervals, or a system of dipping with insecticidal materials that would serve the purpose without injuring the cattle.

There are various mixtures recommended to be used as sprays, and the old standard insecticide, kerosene emulsion, still seems to be one of the best for this purpose.

Under range conditions, however, the ordinary dipping vat is being so modified with high splashboards, etc., as to form a fly-trap, so that when the animal plunges in, the flies which escape immersion go to the upper part of the vat, and are killed by the spray made by the animal when it plunges into the solution.

Some other methods are in vogue, such as driving the cattle through a large cylinder, through the sides of which a powerful gasoline pump causes sprays of an effective insecticide to strike the animals from all quarters and thoroughly wet them.

These latter methods, of course, destroy adult flies in great numbers, but wherever practicable the other, and very important method of destroying the maggots and pupae in the fresh droppings should not be overlooked, in order that greater headway may be made in the control of this pest, which is costing the country so much in the aggregate.

Some years ago the screw-worm-fly, *chrysomya macellaria*, was a veritable plague in the Gulf States. However, since about 1891 or 1892 we don't seem to have been troubled with it to any extent as a severe pest to our farm animals. While its habitat is given as from Canada to Patagonia, the greatest damage from it has been within the tropical and sub-tropical belt.

During the years of its greater prevalence, not only animals but human beings also suffered from its ravages.

The fly lays a mass of some three or four hundred eggs on the surface of wounds, which, in a few hours, hatch into larvæ, and these make their way directly into the wound where they feed on the surrounding tissues until full grown, when they come out, drop to the ground where they pupate, and later the adult fly emerges. Any fresh wound, however small, seemed sufficient to attract this fly at the particular period mentioned. The greatest sufferers seemed to be the young creatures, such as foals, calves, etc., while their umbilical stumps were still in a raw state, and the openings still unclosed. Eggs were laid on these structures, and in a few hours the larvæ had gained the abdominal cavity, with enormously fatal results.

*(To Be Concluded in the Next Number.)*

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DR. JAS. CAMPBELL, one of the old-time readers of the REVIEW, located at Henderson, Ky., has recently been called to his maker.



## **THE VETERINARIAN AS A SANITARIAN.\***

BY DR. E. PEGRAM FLOWER, D.V.S., BATON ROUGE, LA.

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The qualified, progressive practitioner of veterinary medicine to-day occupies an enviable and unique position in the world of science.

As graduates of modern veterinary colleges, maintaining a curriculum that includes courses in pathology, bacteriology, meat inspection, milk and dairy inspection, quarantine and hygiene, subjects that are of especial importance to sanitarians, in addition to thorough courses in anatomy, physiology, medicine and surgery and the related collateral sciences, the veterinarian is peculiarly fitted as a sanitarian and public health officer.

The number of veterinarians employed as sanitary officers for the various states of the Union are legion, and have accomplished much indeed in the preservation of the health of animals in their respective states and indirectly of the people. Other veterinarians have rendered efficient sanitary service to many towns and cities in the capacity of milk and meat inspectors, but the principal benefits obtained by city milk and meat inspection alone have been in the general improvement of sanitary conditions, and consequently the maintenance of human health. A considerable part of the health in general of the live stock of our country, and indirectly of the health of the people, must be attributed to the qualified, energetic, wide-awake local veterinary practitioner, who effectively protects his community from the ravages of contagious and infectious diseases of live stock, communicable to man.

There are many diseases of the lower animals that are also common to the human family, such as anthrax, glanders, rabies and tuberculosis, and the veterinarian is indisputably best qualified to identify these diseases in the animal and to properly quar-

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\* Presented to the Louisiana Veterinary Medical Association, at New Iberia, October 2, 1912.

antine, destroy, disinfect and prevent the spread of such diseases to man. Anthrax, a disease affecting practically all mammals and extremely prevalent in our state annually, is transmissible to man by inoculation through wounds or abrasions, caused or produced generally from handling infected animals, or skinning carcasses that have died of anthrax. There have been numerous fatalities in various sections of our state during the past several years from this dire malady.

Glanders, a disease which chiefly affects horses and mules, is also communicable to man. Only three weeks ago I was called to the parish of Winn to inspect a markedly suspicious case of glanders in a small bay mare, the owner of which had only a few days previous died of an acute case of glanders. This animal was found affected with a chronic case, and had there been a trained veterinarian adjacent to this community, or earlier available, his attention would undoubtedly have been directed to her condition. The resulting diagnosis and complete control of the situation in its incipency, by the proper adoption of sanitary regulations by one versed in comparative pathology, would have been the means of obtaining one human life from death's toll.

While our Live Stock Sanitary Board requires the reporting of infectious diseases by any citizen who may be aware of its existence, failure to do so is often the case through ignorance of the law, or perhaps of a lack of due responsibility.

Rabies, a disease common to the domestic animal and man, and mainly transmissible by means of the saliva and other secretions, can by the surveillance of the vigilant veterinarian be efficiently controlled in its incipency in his community. The proper adoption and enforcement of sanitary regulations, which are too well known to the trained sanitarian to expatiate upon here, together with co-operation from the municipal authorities, are the means whereby serious outbreaks of this disease are prevented or suppressed.

That tuberculosis is transmissible to man from lower animals is now a recognized fact. At the recent meeting of the seventh International Tuberculosis Congress, held in Paris during the

early part of the current year, the opinion of prominent investigators connected therewith and so expressed, indicate that bovine tuberculosis is transmissible to man, especially children. That ten per cent. of the cases of human tuberculosis proceed from infection by bovine tuberculosis. That the majority of cases of human tuberculosis proceeds from contagion between human beings, and that it is necessary to maintain and even increase the precautionary measures already taken against bovine tuberculosis. The wide publication of these investigations should awaken health authorities and the general public to the need of more effective regulations and of scientifically trained veterinarians for their enforcement. It seems superfluous to argue the need of municipal meat and milk inspection. The many instances of meat poisoning from the ingestion of putrid fish and meat, outbreaks of typhoid fever, scarlet fever and other diseases, transmitted through the medium of milk, together constitute, in my opinion, an irrefutable argument for efficient municipal food inspection that cannot be denied. Milk and dairy products are now extensively used as human food; from one-sixth to one-fifth of the food consumed by the people in the nation is derived from the dairy cow. There is probably no one more adequately informed than the trained veterinarian respecting a knowledge of milk: the source of its contamination and the changes which it undergoes after leaving the animal. In addition to this definite knowledge of the diseases of cattle, of stable sanitation, of milk from the standpoint of a laboratorian, he is in a position to command attention and respect from the dairyman. If he is tactful, an attitude of mutual helpfulness and co-operation can readily be established by endeavoring to make the work essentially educational, and not a police supervision with harsh orders and mandates that court the opposition rather than the willing acquiescence and co-operation of the dairyman. To instill enthusiasm in the efforts of the dairyman by endeavoring to demonstrate that a fairly superior quality of milk is possible from a meagre equipment, by a change of methods and conditions, especially where the desire is evinced to try, will be in the end productive of lasting success.

Milk-borne typhoid fever is charged from statistics with about one hundred thousand cases of this disease annually in the United States. It is an indisputable fact that scarlet fever and diphtheria are readily and often transmitted through milk, and it is also a fact that through milk-borne endemics these two diseases pay a heavy mortality toll annually.

The conservation of the health of the people is now a problem receiving the universal attention of the best authorities in every civilized nation, and the interest manifest in this consideration by the veterinary profession relates to the control and eradication of the various infectious diseases of animals and to the safeguarding of the milk and meat supply.

The evolution of the modern practitioner of veterinary medicine, of the sanitarian trained in comparative pathology, from the old "Hoss Doctor" of several years ago, up to the present scientific standard, has been comparatively slow, but nevertheless remarkable. Now, in the place of such characters of the old régime have appeared well-educated gentlemen, who, by their uprightness, fair dealing, courteous attitude and unimpeachable character, have convinced the public that the profession deserves and must obtain a more exalted position in the public mind. The public has been fast to recognize the justness of this position and has accordingly advanced our practitioners to a position far superior to that occupied a decade ago, and will continue to advance us just as fast as we demonstrate that we are entitled to it.

To the man who specializes in comparative medicine, the humane service that he renders in alleviating the sufferings of our dumb animals, and his economic value in preserving the life and usefulness of man's most faithful and efficient servant, the horse, from diseases not due to specific infection, is sufficient in itself to have earned for him the gratitude due a real benefactor of both man and beast. Legislation relative to veterinary requirements and privileges is annually being enacted in the majority of the states, and as the lines are gradually more and more closely drawn, the poorly trained man finds himself woefully in a class unto himself. The value placed on a preparatory education is

also increasing at a surprising rate in every line of work, and we may safely assume that the business-like, intelligent farmer is fast discerning the distinction between the man thoroughly trained for his profession and one who has jumped high and blindly, or who has taken a short cut to a professional degree.

The sanitarian in his rural practice in the past has been much handicapped by lack of legal or state regulations prescribing penalty for their enforcement. Consequently, there has not been the amount of necessary attention devoted to this particularly important line of work regarding live stock sanitation as there could have been. To-day, however, with a most excellent law available for the regulation of contagious and communicable diseases of live stock, placed in the hands of your Live Stock Sanitary Board for their enforcement, there is a mutual interest of co-operation evident between veterinarians, the parish authorities, the parish and state health boards and the Board. After many years of toil and effort, with, however, attending disappointments, to have effected a state law for the control and eradication of contagious diseases of live stock, those gentlemen who have worked so indefatigably toward this end (and I refer especially to our prominent colleague, Dr. Dalrymple) were at last rewarded by seeing the passage of Act 274 at the hands of the Central Assembly of 1908, creating the Live Stock Sanitary Board. For the first two years following its passage, however, there could be but little accomplished, due to an entire absence of appropriation. The following General Assembly, two years since, allowed an appropriation for eradication of the fever carrying cattle tick, and the production of hog cholera serum, but absolutely no provision for control or sanitary work. The past General Assembly, only recently convened, were, by importunity, entreaties and forcible arguments from representative live stock owners and agriculturists over the state, prevailed upon to vote an appropriation for this work. This available fund, though, while not princely, amounting to approximately twenty-five thousand dollars per year, has nevertheless enabled us to assume charge of several situations without delay, where apathy or procrastination



would have been serious. It has been the custom of the Live Stock Sanitary Board to deputize as its representatives and inspectors those qualified veterinarians adjacent to the locality of reported outbreaks of probable pathogenic maladies, when such action is deemed imperative. These veterinary inspectors, as representatives of the Board, and endowed with the same official power as the executive officer of the Live Stock Sanitary Board while in the discharge of such duties, are in a position to promptly and peremptorily adopt requirements suitable to the exigencies in the premises necessary to control, suppress or eradicate the prevailing infection. When the duties of the various parish officials, as prescribed by law, in connection with enforcement of these regulations, are explained and demonstrated, there have been, with but one or two exceptions, complete co-operation and material assistance rendered on their part. The old adage that an ounce of prevention is worth a pound of cure has special application in sanitary medicine. The veterinarian with his training in comparative medicine should be naturally an efficient sanitarian in the maintenance of health of the domestic animal, and as such is accordingly in a position to conduct an available campaign educationally, throughout the rural districts where agricultural interests and live stock abound, while in the discharge of his erstwhile professional daily duties.

Our work must go forward by three parallel and seemingly important lines: First, combating disease wherever found and by every known agency; second, fortifying the body by its natural defences and other agencies; and third, waging a relentless warfare against pathogenic micro-organisms.

I do not wish you to infer from the foregoing discussion of this subject that the veterinarian alone is the only one capable of officiating as a public health officer, or that he alone should be responsible for the preservation of the health of the public. The various phases and conditions, in which the veterinarian is and should be a factor, have been argued, but the conservation of the health can be brought to the highest standard by the co-operation of the veterinarian and the physician. Each has his particular

field, and while they are essentially combined ultimately in the great question of prophylaxis, freedom of consultation and discussion of paramount issues with each other will be of untold benefit.

Having been shown that many of the diseases of animals are transmissible to the human, and that there are many diseases and diseased conditions that originate in the domestic animal or in the products of these animals, it seems only evident that veterinarians should act in the capacity of sanitary officers, especially as milk and meat inspectors, and that every well-regulated board of health should have among its members one or more veterinarians.

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KANSAS VETERINARY ASSOCIATION.—Secretary James H. Burt, of the above association, wishes to say to the veterinary profession of Kansas, through the REVIEW, that everything is being arranged for an excellent meeting at Topeka on the 7th and 8th of this month, and the profession of the state should come out in a body.

A BIG MULE.—The following clipping from the *Breeders' Gazette* of November 13 is an example of what can be produced in the shape of a mule by proper selection of mare and jack. The mule stood 17 hands high, was smooth and shapely, and weighed 2,010 pounds at the time the man who raised it sold it for \$500 as a four-year-old. "The famous big mule which was destroyed in a fire in Trenton, Mo., last summer weighed in good condition 2,010 pounds at four years old. The dam was a Shire mare weighing 1,600 pounds, and the sire was a 16-hand big-boned Kentucky jack weighing 1,200 pounds. At one year old the mule weighed 1,400 pounds, and gave evidence at that time of great stretch of frame and immense size at maturity. At two years old the weight was 1,675 pounds. The third summer this mule was worked on the farm, and continued in the harness until sold at four years old to the Missouri Auction School. At three years old the weight was 1,790 pounds, and at four years old 1,890 pounds." \* \* \*

## **STANDARD, PURE AND POTENT BIOLOGICAL PRODUCTS.\***

By C. A. CARY, D.V.M., STATE VETERINARIAN, SECRETARY OF STATE LIVE STOCK SANITARY BOARD, AUBURN, ALA.

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The multiplicity of biological products that may be found on the market causes the public to open its mouth, buy, devour, suffer, get relief, or get no action, paying the price regardless of results. Even the general medical profession becomes now and then disgruntled, if not disgusted, with the great list of semi-patent biological products that smack of sweet and easy quackery. All that is required is a little pressure of the hypodermic syringe, and the mysterious biological product will do the rest. But why this variety of products that are said to be the same? The differences or variations in purity and potency are due to the care, honesty, ability and facilities of the maker of the biological products.

For instance, take the history of tuberculin and its record of twenty-two years has been a variable and checkered one because of its commercial value and variety of makers. Some of the erroneous records made by using it as a diagnostic agent, not to say anything about its use as a curative agent, have been due to impotent tuberculin that was forced on the market before it was standardized or tested.

Again, look at anthrax vaccines. Doubtless the indiscriminate sale of anthrax vaccines to the laymen, and possibly to professional men, has been the means of disseminating anthrax, especially where the germs were not properly attenuated. In all cases where such vaccines as anthrax are to be used, there should be no possible doubt about the strength or degree of attenuation, and then they should not be placed in the hands of the inexperienced and technically ignorant. In fact, the use of anthrax vaccines should never be permitted until a positive biological diagno-

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\* Presented to the forty-ninth annual meeting of the American Veterinary Medical Association, at Indianapolis, August, 1912.

sis has been made by a competent expert. The Alabama Live Stock Sanitary Board has a regulation demanding that a positive diagnosis of anthrax be made by some recognized state authority or by the Bureau of Animal Industry before anthrax vaccine can be used even by professional men.

The well-known outbreak of foot-and-mouth disease is said to have been brought about by the mistaken use of contaminated and infected smallpox virus that was used by a commercial factory of biological products.

If accurate records could be secured, it would be very interesting, if not astonishing, to find how many failures, mistakes, actual, serious infections and impotent results have obtained from the indiscriminate manufacture, sale and use of nearly all biological products. Why should such a hazardous, heterogenous state of most important affairs be left the variables and unknown quantities in commercialism, when there are ways and means by which the medical profession and the public may be protected, without unduly restraining commercial trade.

The best way out of this perplexing difficulty is to place manufacture and sale of all biological products exclusively into the hands of government. Public good, public welfare and public health demand it. Some assert that such a procedure would lead to paternalism. But the results to be obtained are solely for the good, the welfare and the protection of the public; and consequently the end justifies the means. Moreover, the means or method is also correct and in every way right. The law regulates quarantine, the manufacture and sale of poisons and such drugs as cocaine, morphine, opium, strychnine and arsenic; why not biological products that are used in the treatment and protection of animals? There are many good reasons why the government should manufacture and regulate the sale of all biological products. The government can secure the best experts, whose salaries need not depend upon commercialism. Here some one may claim that politics would influence the work of the expert. The same can be said of the commercial manufacturers of biological products. They have been known to play political hands. Moreover,

the biological workers at Washington have had almost an unlimited tenure of office. Again, governmental authorities can secure the best materials and facilities, and can thus as near as possible make a constantly standard biological product.

Another plan would be to have the government and the various states make the biological products. In some things, like hog cholera serum, this plan might work equally as well, and in some ways better than to have the government make all the serum. Yet it might mean as many kinds of serum in purity and potency as there are states. However, there can be co-operation of states, and then the standard could be uniform.

There is still another way of controlling the output of biological products. It is the one that is now in force regulating the manufacture of biological products used by the human family. The manufacturers obtain a license from a government department, and this department periodically tests the products of licensed houses and thus forces them to make standard products. This method has greatly improved the products used in human medicine. Yet there are loopholes and defects. The government department tests only a few of the products made by the private or commercial house, whereas, if the government or state were making it, every "batch" or combination of "batches" would be tested.

In January, 1912, the Alabama Live Stock Sanitary Board, at the writer's request, promulgated a regulation which required the manufacturers of the biological products to be sold in Alabama to obtain the endorsement of the Bureau of Animal Industry. Some of the B. A. I. men looked upon this favorably, but the Secretary of Agriculture said that there was no federal law and no money to enforce control over the making of biological products. Dr. Melvin wrote me that there was an attempt being made to have a law passed giving the Bureau of Animal Industry a license control over the making of veterinary biological products. It is to be hoped that it, or some other good federal law, will be passed and put into effect at an early date.

I do not wish to imply or to assert that much good has not



been done by the manufacturers of biological products. In fact, they have done a great deal that could not have been accomplished without their work, but some of them—in fact, nearly all of them—have pushed the commercial idea to such an extent that they are advertising and selling products in a way that is not commendable, not to say anything about the medical or scientific aspect of the work. In fact, if the best houses now in existence would eliminate the semi-patent medicine advertisements and the “quack” testimonials, and then standardize their products according to some fixed government standard, they would certainly improve and be second only to the actual government manufacture of the products.

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DR. JOHN F. WINCHESTER, OF LAWRENCE, MASS., represented his city at the “National Conference of Housing,” held in Philadelphia December 4 to 6, 1912, and we find his name heading a list under the caption “Many Noted Speakers” in the *Philadelphia Record* of December 5. Dr. Winchester, who occupied the unique position of being the only veterinarian who participated in the conference, which had for its purpose the betterment of the housing conditions of the poor in the cities, was the official representative from the Department of Health and from the Department of Charities of the city of Lawrence, and his report to Alderman Robert S. Maloney, Director of Public Health and Charities, on his return home, was right to the point in regulation Winchester style.

VETERINARY SURGEON BREEDS PERCHERONS.—On December 20 we were honored by a call from Dr. W. T. Patton, of Coutts, Alberta, Canada. Dr. Patton, who for a number of years served under Dr. John G. Rutherford in the “Health of Animals Branch” of the Canadian Department of Agriculture, resigned from the service some time before his chief resigned, to take up the breeding of percherons on his ranch at Coutts, Alberta. The doctor reports the outlook for draft-horse breeding as excellent, the markets being good. After a couple of weeks in the American metropolis, he will return to his ranch, which demands his careful attention.

## HEMORRHAGIC SEPTICEMIA.\*

BY S. H. WARD, ST. PAUL, MINN.

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Mention of this peculiar disease of cattle and sheep is rarely seen, even in the most recent text-books. Hutyra and Marek, perhaps, give the most concise account of the disease, yet there are points met with in our autopsies which differ materially from those given by these authors.

The specific organism was isolated from cattle by Wilson, of Minnesota, and from sheep by Beebe, of Minnesota, hence there is no doubt as to the causative factor. Numerous outbreaks occur in Minnesota, and undoubtedly in other states, and it is very possible the disease may be confused with anthrax, which it closely resembles. The most virulent outbreaks occur among cattle during the months while animals are on pasture. In sheep the disease, while by no means as prevalent as in cattle, appears frequently enough to cause severe losses to owners.

Two great peculiarities are noticed; first, the extreme virulence of the disease for a short time. Ten or twenty per cent. of the herd will die perhaps within twenty-four hours, with no further loss, although animals may be kept in the same pasture and under similar conditions. The second peculiarity is that outbreaks are far removed from each other, with no history or possibility of exposure, and no recurrence of the disease on the premises. Outbreaks are seen on high, sandy land, as well as in low lands. Some are of the opinion that outbreaks are more frequent on the higher sandy lands. Weather and pasture conditions seem to have no bearing upon outbreaks.

Symptoms of the acute form in mature animals are that it is usually ushered in by a general dullness, temperature about normal, cessation of appetite, rumination and milk secretion, bloody diarrhea, and sometimes a frothy, pinkish discharge from nos-

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\* Read before the sixteenth annual meeting of the U. S. Live Stock Sanitary Association, Chicago, December, 1912.

trils. In the chronic form usually met with in the late winter months, especially when cattle are poorly kept, we find that about the only symptoms exhibited are the cessation of appetite and a paralysis of the hind extremities.

In young animals the acute type is manifested by totally different symptoms. In these cases we have animals staggering, running into objects, bawling as with fright, falling over, legs drawn up to body, and eyes rolling in the sockets.

*Sheep.*—In these animals we have had occasion to see but three outbreaks, each, however, being of the acute type—animals dying within twenty-four hours after first noticed. As a rule there is a slight mucous discharge, accelerated respiration and marked dullness.

*Autopsies.*—Hemorrhages in all the serous and mucous membranes. Hemorrhages are seen in the subcutaneous tissue and between the muscles in various parts of the body.

In cattle there is frequently seen a gelatinous infiltration under the skin. The spleen, especially in sheep, is seen to have large, wine colored areas. In other cases the hemorrhagic areas are much smaller. The condition of the spleen in cases coming under our notice is at marked variance with the findings of Hutyra and Marek, who state "the spleen preserves a normal appearance."

*Treatment.*—Nothing in the way of treatment can be suggested, owing to the rapid course of the disease. A recent article on the "Treatment of Rinderpest and Hemorrhagic Septicemia with Permanganate of Potash," by Major C. K. Walker, of the Indian Civil Veterinary Department, published in the September issue of the *Journal of Comparative Pathology and Therapeutics*, says the result of this drug in the treatment of hemorrhagic septicemia seems to be hopeful.

The ordinary dose for medium-sized cattle may be stated to be 2 drams, and calves may receive  $\frac{1}{2}$  to 1 dram.

It is evident from the table that accompanies the article that the cases met with in India are more of the chronic type, as most of the cases quoted are from two to five days in duration, while the cases met with in Minnesota result in death in an exceedingly

short time, making it extremely doubtful if even intravenous injection of this drug would accomplish very much.

As to control measures, it is obvious no restrictions on infected farms can be put into operation, as the disease does not spread, and after attacking a certain number of animals no further loss is experienced, nor has the disease continued on the premises.

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NINTH ANNUAL REPORT MINNESOTA LIVE STOCK SANITARY BOARD.—With the compliments of Dr. S. H. Ward, secretary and executive officer, we have received the above-named report for the year ending July 31, 1912, neatly bound in cloth, wine color, with gold lettering, and containing a concise and comprehensive report of the Minnesota live stock sanitary work, covering tuberculosis, glanders, rabies, hemorrhagic septicæmia, anthrax, blackleg, contagious conjunctivitis, malignant and catarrhal fever of cattle, corn-stalk disease, cerebro-spinal meningitis, etc., etc. Two very important and useful features of this little brochure are the "*Directory of Minnesota Breeders of Pure-Bred Cattle, Whose Herds Have Been Tuberculin Tested Under Direction of the Live Stock Sanitary Board*" and the "*Requirements of States Covering the Importation of Live Stock.*"

HOLIDAY EDITION 1912, BREEDER'S GAZETTE received, and we are impressed with its beauty and its high quality. The front cover page is graced by a beautiful head of a draft horse, and the supplement water-color, entitled "Imposing on Good Nature," is pretty enough to be hung upon the wall of any room. In addition there are many interesting illustrations distributed throughout the number, and following Mr. Alvin H. Sanders' "*In Hoc Signo Vincas*," there are a great number of articles of more than ordinary interest from the pens of prominent men. Among others of especial interest to veterinarians is one entitled "Motor Trucks Supplementing But Not Supplanting Draft Horses," by James E. Poole, and another entitled "Scientific Shoeing of the Draft Horse," by Prof. Joseph Hughes, M.R.C.V.S., of the Chicago Veterinary College. Altogether it is a very excellent number.

## REPORTS OF CASES.

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### INFECTIOUS ABORTION IN SWINE.

By M. H. REYNOLDS, St. Paul, Minn.

So far as reports in current American veterinary literature are concerned, this must be a very rare disease among American swine. The writer does not remember of seeing any mention of it in our current literature. Standard works on veterinary practice merely mention it casually as a possibility. This outbreak is being reported for the purpose of giving it permanent record and in the hope that it may lead to the collection of further information concerning its prevalence and the possible seriousness of this disease.

Before giving the details concerning this outbreak, it should be explained that this occurred on a well-managed stock farm. The farm superintendent is an unusually careful, capable man, a graduate of an agricultural college, and thoroughly practical.

Under date of April 20 I received a letter from one of our agricultural college graduates, an experienced farmer and a very intelligent man, inquiring as to whether there was such a thing as infectious abortion among swine. From this letter, subsequent correspondence and personal conversation, the following has been gathered and verified:

*Farm A*—Eleven brood sows were involved; six between one and two years of age and five yearlings. The boar was put with them on December 15, 1911. The sows were fed bundle corn with ordinary table refuse, but no dish-water. They had some potatoes, with a limited amount of bran and ground feed, with continuous access to a mixture of wood-ashes, sulphur and salt. Two or three weeks before farrowing time the sows were separated. Each one was given an individual pen. The feed was changed to a slop of milk, water, bran, ground oats and corn. One week after this separation, the first sow farrowed eleven pigs, all alive, fat, in good condition, but premature. They were small, without hair, estimated from two to three weeks premature



in birth. They all died soon after birth. The pigs were buried, and the sow was isolated.

*Sow No. 2* farrowed three days later 11 pigs, apparently at about normal term, all alive; all saved.

*Sow No. 3* farrowed the same day in pen next to sow No. 1. She had 13 pigs, about normal size, but without hair. Eight died at birth, 5 living. These sows, by the way, all are pure Duroc-Jerseys and dark red in color. The premature pigs were all without hair and the skin pure white.

*Sow No. 4* farrowed three days later than the preceding, twelve pigs: three born dead, 9 alive, but died soon after birth. This sow was next to a sow in pen No. 2. The sow died soon after farrowing. Examination post mortem showed one very small pig about the size of a rat, evidently dead for some time, and one other dead unborn pig that was, as the superintendent described it, "turned in the womb, preventing birth." Sow's bladder was ruptured.

*Sow No. 5* farrowed the same day as sow No. 4, in pen next to No. 3. Nine pigs, all alive, but died immediately after birth. Pigs small, without hair, evidently a few weeks premature.

These sows were in good breeding condition, not excessively fat. There does not appear anything in the feed, care or surroundings of this herd in any way to account for the trouble, with the exception that the pens are floored with lumber from the floor of an old cow stable, but investigation indicates that there had never been, so far as known, any abortion among the cows kept in the stables. The hog pens had never been previously used for hogs. I immediately wrote to the superintendent (a personal friend), calling attention to the possibility of serious importance in the trouble among his swine, and suggested that, if possible, precaution be taken to avoid dissemination, in addition to some advice for the local management of this individual herd.

We were not able to secure any material for laboratory work on account of time that had elapsed between the last losses and the first report to us.

Under date of May 16 I received another communication from the superintendent, Mr. D., from which this further information was secured. *Sow No. 6* had farrowed since the previous report with about the same results. She gave birth to 14 pigs, all alive, without hair, evidently premature. All died within a few hours, except two. This sow was two years old and the mother of the other five sows.

Mr. D., foreman Farm A, reported on September 6 that two of the first five aborting sows had recently farrowed full litters, all normal. Sows and pigs doing well. These sows farrowed August 24 and August 29.

The boar used in this herd was purchased in the southern part of the state from a farmer who had raised him. He was farrowed in the spring of 1911, and therefore something less than a year old at the time the sows were bred. The farmer from whom the boar was purchased reports that he had never had abortion among either his hogs or cattle and had brought no outside hogs onto the farm for two years, excepting one young boar which he bought from the Farm A, whereon the five sows aborted; *i. e.*, the two farmers practically exchanged boars. Under date of July 16, the superintendent of Farm A stated that a sow belonging to a neighbor, who used the boar belonging to Farm A, farrowed on July 14 six pigs, all mature and normal in every way. On July 15 another sow, bred to the same boar by this neighbor, farrowed, with everything normal and right. July 15 another sow farrowed for this neighbor. Pigs sired by boar in question. Everything normal. Note that these sows belonging to the neighbor were bred after the Farm A sows were in pig and before any of them had aborted. The infection in this case does not seem to have been transmitted by the boar. The superintendent of Farm A has been unable to get any information, giving a reasonable suspicion of abortion among cattle on this farm where he is now superintendent. The superintendent reports in this communication of May 16 that a neighbor owning eight brood sows had had the misfortune of abortion in one of the sows, which farrowed about twelve days before normal term. The pigs were similar to those as described: small and without hair. The superintendent, having an experimental turn of mind, has bred two aborting sows to the same boar which served them last December, with a view to watching results. Of 68 pigs farrowing by the six sows, only 17 were living at the time of the report.

We are promised material for laboratory and inoculation work, in case of trouble occurring again at the next farrowing time. It is unfortunate, of course, that we were unable to secure materials for such work from the outbreak which I have reported.

A careful study of feed, feeding, methods and surroundings, type of hogs, climatic conditions and general management does not appear to give any reasonable ground for suspecting that these abortions were sporadic rather than of the infectious type.

## TREATMENT OF CHOKE IN THE HORSE.

By HORACE BRADLEY, D.V.M., Windsor, Mo.

Choking in an animal always frightens the owner and causes him to seek assistance without delay, and he urges a prompt, quick call. While the veterinarian, unless armed with something different for treatment than that laid down in the text-books, periodicals and journals, will delay making the call as long as possible, in the hope that the horse will be relieved before he arrives.

During my early practice, cases of choke in the horse were the one great dread of my practice, but fortunately a large percentage have been relieved by nature before my arrival. These cases are usually rightly diagnosed by the owner or attendant, and the accident is generally understood as to the causes, the location of the obstruction, physiological and anatomical construction of the organs involved, so it is my intention only to give to you a remedy that I have discovered that will dislodge the obstruction and make these cases desirable. I say I discovered this, for I have never heard of it being used by anyone, and studied it out myself. The old lines of treatment, such as running the animal and jumping him over fences and drenching with oils, etc., are dangerous. The use of the probang does not always dislodge the obstruction, and, no matter how cautiously used, frequently injures the tissues and later proves fatal.

The operation of passing the stomach tube down to the obstruction, cutting down onto the esophagus and tying a cord tight around the esophagus anterior to the obstruction and forcing a water pressure on the obstruction, as advocated by some inventors of stomach tubes, would not meet with the approval of the owner of a valuable horse, even if it was good surgery.

Dr. J. A. McCrank's method, as given in an article in the December, 1910, REVIEW, of placing the patient in a box stall, away from noise and visitors, with a bucket of water in the manger and leave him to the mercy of nature, would hardly satisfy the owner, and be service for which he would be pleased to pay a reasonable fee.

I have seen eserine recommended, but have never tried it. The drug that I use for choke in the horse is apomorphine hydrochloride. The smallness of the dose gives this drug the advantage of being inexpensive, and it is free from irritating properties and may be used hypodermically. The subcutaneous dose is  $\frac{1}{2}$  to  $\frac{3}{4}$  grain. Its action is expectorant, sedative, and produces relaxa-

tion and increase of secretion. Following are some cases in illustration:

*Case 1:* Subject small, branded western mare, ten miles in country and at night. At that time Dr. R. L. Allen and I were partners and made this call together. It was in the fall, and she was running on short pasture and being fed green fodder in the evening. In her ravenousness, she had undertaken to swallow a small nubbin, husk and all, without chewing it, which lodged in the cervical region of the esophagus and could be felt by manipulation. She had not been educated above her western disposition, and objected very seriously to manipulation, and when we placed the mouth speculum on her, preparatory to passing the probang, she became furious and whipped us all out of the yard. This was an opportunity for me to try my new remedy, and I told Dr. Allen if he would tell my wife that I had died brave, that I would venture to give a hypodermic injection of twelve 1/20-grain tablets of apomorphine. Just 13 minutes after the injection she was relieved and ate corn blades.

*Case 2:* Small, aged, emaciated pony, with very few teeth, brought to my place at 8 o'clock in the morning. When I saw him coming, frothing at the nostrils, head lowered, ears drooped, dejected appearance and staggering gait, I thought I had a case of rupture of the stomach. After examining the pulse, I changed my opinion and, on inquiring into the case, learned that on account of the absence of teeth to properly masticate hard food, that he was being fed on roasting ears, and that he would just break these up and swallow them in large pieces. For the evening feed the day before he had been fed twelve ears and had gotten away with only about one-half of them, which indicated that he had been in this condition all night. I passed the probang and came onto an obstacle in the thoracic region which could not be dislodged with safety. I then gave thirteen 1/20-grain tablets of apomorphine, and in thirteen minutes he was eating grass.

*Case 3:* 1,200-pound aged mare, while being worked gathering corn, had swallowed a large husk, which lodged in the lower third of the cervical region. A 3/4-grain dose of apomorphine, hypodermically, brought relief in a few minutes. The owner remarked: "By George, I never would have thought of unchoking a horse in that way!"

*Case 4:* Average-sized, aged mare. Had been choking three days. Apomorphine, 3/4 grain, was injected, and one hour after

drank one gallon of water and ate some corn. Ate some the following day, but died three days later. The owner posted this case and found that the foreign body had passed on into the stomach, and inflammation had set up where it had been lodged, which caused death.

*Case 5:* Large three-year-old jack, supposed to be choked on cob;  $\frac{3}{4}$ -grain apomorphine given. Was able to eat in a short time.

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### VALIDOL—SOME INDICATIONS FOR ITS USE.

(*Valerianic Acid Menthylester*,  $C^{10}H^{10}O.CO. C^6H^6 + 30\%$   
 $C^{10}H^{10}OH$ .)

By WALTER LINCOLN BELL, D.V.S., Brooklyn, N. Y.

**CHEMICAL AND PHYSICAL PROPERTIES.**—Validol is a menthylester of valerianic acid with 30 per cent. of free menthol. It is a colorless, crystal-clear liquid of the consistency of glycerine, having a refreshingly cool and very faintly bitter taste. Its odor is mild and pleasant, distinct from either that of valerian or menthol. It is decomposed by alkalies, insoluble in water, readily soluble in alcohol, chloroform, ether or oils.

**PHARMACOLOGICAL CHARACTER.**—The product is a non-poisonous, non-irritant and perfectly harmless analeptic, antihysterical, carminative and stomachic, possessing the therapeutic properties of its two components to a marked degree. Being entirely free from the nauseating odor of valerian and the irritating acridness of menthol, it is well tolerated by the most sensitive patient. It forms an excellent vehicle for additional quantities of menthol, rendering possible the administration of this most valuable analeptic in very large doses and in a most pleasant form.

Some two years ago this preparation was brought to my attention and I have carried out a careful and thorough trial of same and have adopted it in an extensive practice, specializing in the treatment of smaller animals, and have found the therapeutic indications to be; first, as a restorative in conditions caused by shock of any kind; second, as a gastric sedative in vomiting or acute gastritis, and third, in debility consequent upon canine distemper.

Here it is also of undoubted value owing to the mentholic effect upon the intestinal tract, where this condition (distemper) undoubtedly first manifests itself. This, as well as the sedative action of the valerianic acid upon the central nervous system,



places validol in the first rank as a therapeutic agent, especially in those extremely highly nervous breeds of dogs, in which chorea so frequently follows distemper.

Another class of cases in which validol is of essential use is those forms of rheumatism we are so frequently called upon to treat in pets that are much confined to the house. In these cases the local use is indicated as well as the internal administration, and I have found it particularly efficacious in rheumatisms of the cat.

I append two of the cases in which I have secured very successful results with validol:

*Case 1.*—Bull terrier, nine years old, had always enjoyed good health and was in condition until 1910, when the bowels became impacted by reason of the non-digestion of a chop bone which was carried to near anal end of rectum, where it became lodged. This condition had undoubtedly persisted for some days when I saw animal, as the odor from the mass indicated. I broke it down with force of water from a fountain syringe (well raised above body height) and blunt curette. There was naturally extreme nausea present and much auto-intoxication. These conditions were very successfully combated with five drops validol in capsule every four hours for eighteen hours, after which time vomition was controlled, general condition much improved and above dose was continued three times daily for several days.

This same dog later had several attacks of "lumbago" and these were shortly terminated with same dose of validol every four hours until acute symptoms abated, after which it was given three times daily for several days. A small amount was also rubbed in over lumbar muscles twice daily and undoubtedly rendered good service.

*Case 2.*—Persian cat, adult, had litter of kittens six weeks previous; about this time developed a very acute general rheumatic condition, particularly affecting the lumbar region and causing complete inability to walk or even crawl. Much pain when moved, bowels torpid, feverish. *Treatment:* Aloin grains one-twelfth every hour for six doses, when bowels showed sufficient effect, and from start the cat was given three drops of validol in capsule every four hours, followed by small amount of sugar and water solution each time; small amount of equal parts validol and olive oil rubbed in over lumbar region twice daily, and the animal made a very satisfactory recovery.

*Dosage.*—Internally, two to fifteen drops, according to age and breed of animal; best given in a little sugar-water or capsule

followed by some dilutant, repeated as necessary. Externally, as an inhalant or diluted with equal parts olive oil and rubbed in indicated places.

### RARE CASE OF DYSTOKIA IN THE MARE.

By D. J. MEADOR, B.S., D.V.M., Selma, Ala.

March 22, 1912, I was called to attend a case of dystokia in a bay mare weighing about 1,000 pounds.

On arriving I found the mare down in a cotton field. She had been working at the plow and was taken out on showing signs of the approaching parturition.

The owner informed me that the mare had been in labor for about two hours. She was in extreme pain, and being much exhausted, her expulsive efforts, while quite frequent, were very weak in force.

After being told that no attempt had been made to remove the foetus I at once made examination. This revealed an anterior presentation with dorsosacral position. Both forefeet were in the vagina. A right lateral deviation of the head and neck were the cause of the dystokia. It was observed to my surprise that a live foetus was being dealt with.

As quickly as possible preparations were made for a delivery. The mare being in lateral recumbency on her right side, it was not necessary to change her position.

A cord was passed over both forefeet and the entire foetus repulsed. This allowed the head and neck to come within reach. The mouth of the foetus was grasped and the head and neck placed in proper position. Traction was now applied to the cord, while the hand guided the head and a quick delivery was effected.

The foal was indeed a very weak one and special effort was used to keep up respiration. The foal was dried and placed on a blanket, and the mare was given strychnine subcutaneously.

The foetal membranes did not pass out with the foal and were found to be so firmly adhered to the uterine walls that it was decided to remove them later.

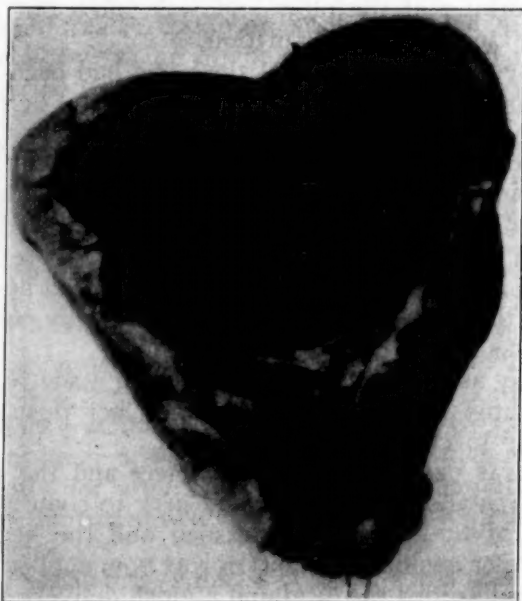
The owner was instructed to let me know if the mare was unable to rise after an hour or two. I heard nothing, however, and the next morning on arriving at the farm I found that the mare had cast her membranes and was being followed by a fine colt.

It seems that the preservation of the life of this foal is to be accounted for by the membranes remaining intact, thus insuring nourishment while the mare was in labor, and by the fact that no forced extraction or crude methods had been attempted.

### FILARIA IMMITIS IN THE DOG.

By W. H. DALRYMPLE, M.R.C.V.S., Baton Rouge, La.

The accompanying photograph illustrates the presence of the *Filaria immitis* in the heart of an aged pointer bitch, in the practice of Dr. E. Pegrim Flower, of Baton Rouge. Definite history



and particulars in relation to the case cannot be given, beyond the fact that the animal was in a dropsical condition, as it occurred many years ago, but thought the photograph sufficiently good to be worthy of reproduction in the REVIEW.

### A PECULIAR CASE.

By J. V. HILLS, D.V.M., Gowanda, N. Y.

An aged bay gelding, affected with heaves, had been unable to swallow water or eat anything for 24 hours, when the writer

was called. Temperature and respiration were normal, and the animal constantly attempted to eat and drink, but with no success. Examination of mouth and throat with speculum revealed nothing. Neither was there any soreness or swelling anywhere. I passed a rubber hose down his oesophagus easily; and as he had not drunk for 20 hours, I pumped two large pails of water into him through the hose with the injection pump, adding a little castor oil to the water. After withdrawing the hose I gave the horse  $\frac{1}{2}$  grain strychnine sulph. hypodermically, and prescribed mild liniment to be rubbed on the throat, informing the owner that I considered it nearly a hopeless case, and advised that if he was no better by the next day to destroy him, as, in addition to everything else, his age and the heavens were against him. This was in July.

A month later I saw this horse and his mate hauling a load of gravel, and then learned the following from the owner: He told me he would not swallow anything, but he had poured milk and water into him for two days, when he went down and could not get up. He kept pouring water and milk into him, and put a poultice on his throat. It was 10 days before he could get up again, when he recovered quite rapidly and was soon able to eat again. The owner censured me for advising him to kill the animal, saying the trouble was sore throat, which I told him emphatically was not the case. I am stating this as near to the facts as I can learn them from my observations and from the owner; and if anyone has had a similar experience, kindly answer through the REVIEW. The horse has not had another attack since.

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INDIANA STATE BOARD OF VETERINARY MEDICAL EXAMINERS holds its next meeting at the State House, on Tuesday, January 14, 1913. Candidates may obtain particulars by addressing Dr. O. L. Boor, secretary, Muncie, Ind.

DR. WARREN L. THAYER MARRIED.—On December 7, 1912, Dr. Warren L. Thayer, class of 1897, McGill, was joined in wedlock with Miss Minnie E. Munson, of Worcester, Mass., where the happy couple will reside after their return from a short trip to the South. The REVIEW invokes its blessing.

## ABSTRACTS FROM EXCHANGES.

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### ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

**MULTIPLE VESICAL CALCULI IN DOG** [*Henry Taylor, F.R.C. V.S.*].—Retriever dog exhibited all the symptoms of blocking of the urethra by urinary calculus. He is operated, and with the mischievous stone, eight others, smaller, are removed. The dog does well for about ten days, although his urine is a little tinged with blood. He has another obstruction, is operated a second time and thirty more calculi came away with the first rush of urine. The animal does not seem to do well and the owner had him destroyed. The postmortem revealed the fact that the spleen contained several lympho-sarcomatous tumors, the kidneys were cirrhotic, the bladder contained ninety more calculi, besides a quantity of sabulous matter like gravel. Several calculi were embedded in the mucosa. The subcutaneous tissues in the region of the operation were sodden and green as if the urine had infiltrated and had a decomposing action.—(*Vet. Record.*)

**UNUSUAL ABSCESS IN ABDOMINAL WALL** [*By the same*].—Filly is found one morning with pus oozing from what appeared to be a small abscess in the muscles of the flank just inferior to right stifle. As no improvement takes place under ordinary treatment, and as by probing a tract running downward under the skin was detected, a seton was introduced after making a dependent opening. No improvement, discharge remains the same. As the trouble exists since over six weeks, the mare is cast, the tract fully incised in its whole length and the tissues underlying being found much discolored and unhealthy, black and infiltrated, necrotic in fact, they are all excised, leaving but a very delicate thin layer for the abdominal wall. Fearing its possible rupture, as the animal would rise, much care was applied to guard against it. Recovery was looked for after this, but white granulations had developed and complete cicatrization apparent, there remained for weeks after, a small sinus and discharge. The animal being cast again, the cicatrizing wound was carefully examined and finally a probe was inserted into a fine tract, which required a minute dissection before the knife penetrated into the



cavity of an abscess, situated on the inside of the abdominal wall and was about the size of an orange. The entrance to the cavity was enlarged, drainage established and disinfecting dressing with lysol or izal completed an uneventful recovery. It is unusual to find an abscess so deeply situated. The filly never had strangles.—(*Veter. Record.*)

A CASE OF LAMENESS [*Capt. W. H. Taylor, A.V.C.*].—Eight years old past, this bay gelding becomes lame—there is no history previous to it. The trouble is located on the off fore leg with slight enlargement of the pastern joint. Treatment is applied without benefit to the patient and the lameness becomes so severe that it was decided to kill the gelding. At the post-mortem examination the articular surfaces of the pastern joint were found extensively diseased, with a piece of bone, the size of a haricot bean, being almost loose by an ulcerative process. The os corona had an ulcer corresponding to it. In boiling the bone the small piece fell off from the principal part of the suffraginis, on the lower third of which was a well developed exostosis.—(*Vet. News.*)

DILATATION OF THE STOMACH—DUODENAL ULCER [*E. Wallis Hoare, F.R.C.V.S.*].—Gray cart gelding, with exception of two attacks of colic, has been in perfect health. One morning he is found shivering, has slight salivation, respiration accelerated, frequent efforts to micturate, lays down and has some difficulty to rise. Visible mucosa are pale, pulse quick, temperature normal. Flatus at intervals. Later on, he has eructations and oesophagal regurgitation; few grains of oats are in the nasal discharge—then he has a haggard expression of countenance, tympanitis and the pulse is almost imperceptible. Terebene and linseed oil are given. Animal is much distressed, groans, lays, struggles and dies. Postmortem shows stomach much enlarged and looking like the rumen of an ox. There is only moderate amount of gas, but enormous amount of fluid. In the duodenum a well-marked ulcer is found extending to the peritoneal coat and surrounding the opening of the bile duct.—(*Vet. Record.*)

VOLVULUS OF THE ILEUM [*By the same*].—First, aged gelding after a day of slow work is taken home in evening and eats his food. Next morning he is found in pain, much marked about head and quarters. He receives a cold drench. He soon has a haggard expression, sunken eyes, sweating, abdomen hard, tym-

panitis, looked toward the flank. He has no violent colics and passes small quantity of hard feces. Chloroform gives a little relief but this is only temporary and death takes place in the evening. *Autopsy*—Abdomen much distended. Volvulus at the termination of the ileum with 14 feet of the intestine much inflamed and distended with foetid blood. Stomach full of ingesta. Second, another aged gelding, while at work is taken with violent pains and sat on his haunches for long periods. He lies down, attempts to roll and then sit on his haunches. The position seems to give him the most relief. Chloral brought some relief and was given at intervals. Death took place after several hours of suffering.

*Postmortem*.—Intricate twist was found in the ileum toward the distal end. It resembled a double knot and could not be disentangled even after removal from the body.—(*Ibid.*)

PULMONARY HELMINTHIASIS IN THE ASS [*A. W. Noel Pil- ters, F.R.C.V.S.*].—This history of the patient, a yearling donkey, was that it had been bought about three months before and had gradually lost flesh. Frequent attacks of violent coughing with expulsion of frothy material from the nose were also noticed. After an illness of two months he died. *Postmortem*—Several worms were found protruding from both nostrils, 200 specimens were in the turbinated bones, many were also in the passages leading to the posterior nares. The larynx was crowded but the trachea contained only four worms. At the bifurcation of the bronchi the parasites were so numerous as to blockade the lumen almost entirely. Sections of the lungs showed the presence of worms. There was one in the oesophagus and two in the stomach. *Fero strongylus vulgaris* were in the small colon. Under microscopic examination of the lungs many ova of strongylus and immatured forms were exposed.—(*Vet. Record.*)

HYDROCHLORIDE OF UREA AND QUININE AS LOCAL ANESTHETIC IN VETERINARY PRACTICE [*Prof. Geo. H. Wooldridge, F.R.C.V.S.*].—The author records four cases to illustrate its usefulness; in one, for the amputation of the dew claws of a fox terrier, in two others for the removal of large mammary tumor and in the fourth for shoulder tumors in a horse. The operations were successful, and the professor writes as conclusions: "It will thus be seen that hydrochloride of urea and quinine is quite an efficient local anesthetic in the strength of 1 per cent. to ½ per cent. Its action, however, appears to be very limited in

extent, and does not spread far from the seat of injection. It does not appear to possess any hemostatic action, but can be effectively used in combination with renastypin or other suprarenal preparation. Compared with cocaine it is less toxic and much cheaper. It is slower in action; an interval of at least half an hour should be allowed between injection and incision, but its action is more durable. In fact, it has been claimed that some anodyne effect persists for several days."—(*Vet. Journ.*)

INTESTINAL SARCOMA AND ENDOCARDITIS IN A HORSE [*W. Lothian, M.R.C.V.S.*].—Thoroughbred mare, always in good health and good worker, is turned out after hunting season. She is observed dull one morning and on examination her heart seems to be the chief seat of the trouble. Cardiac tonic and stimulants were prescribed, but the mare died two days later. Postmortem revealed croupous peritonitis and "along the large intestine a number of large lumps in the bowel substance about the size of one's fist and most numerous about the diaphragmatic flexure of the colon." These were round-celled sarcoma. The heart showed a small warty growth affecting the right tricuspid valve, different in character from the bowels.—(*Vet. Journ.*)

DIFFUSE LIPOMATOSIS IN A MULE [*Capt. H. A. Stewart, M.R.C.V.S., A.V.C.*].—Mule has a weak thready pulse, respirations about normal, temperature 102° F. anorexia, slight diarrhoea and inclination to lie down. She braces up some under treatment for short time, and dies without a struggle. *Postmortem*.—Abdominal organs are covered with modulated fatty masses, between the folds of the mesentery there is a fatty tumor weighing 40 to 45 pounds. The liver was in chronic venous congestion and had several small lipomata on its surface. Antemortem clot was found in the left auriculo-ventricular opening.—(*Ibid.*)

GASTROTOMY WITH REMOVAL OF A BALL [*Prof. Fred. Hobday, F.R.C.V.S.*].—Eighteen-months well-bred bulldog swallows a rubber ball. He has vomiting, principally after taking food or after any excitement. Radiography is applied to confirm the condition of his stomach and the result was the demonstration beyond all possibility of doubt of the presence of the ball in his stomach. Laparotomy was performed and recovery perfect. The diet was carefully carried out; no food per mouth for four days, rectal meat suppositories every four hours, teaspoonful of water

at same intervals. On the fifth day bovine was allowed three times a day and kept up with gradual increase. Then Brand's essence of beef. Meat was allowed only after the eighth day.—(*Ibid.*)

## FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

EARLY ATTENDANCE IN THREE CASES OF SEVERE TRAUMATISM [*Mr. Bonnigal*].—*First*—Horse receives with an iron skiver a big laceration of the skin, on the median line of the abdomen, 15 centimeters from the xyphoid sternal cartilage. Attended to four hours after the accident. The abdominal walls are perforated, three fingers can be introduced in the abdomen and the sternal curvature of the colon is felt by them. Antiseptic treatment with tincture of iodine, pressure made by the skin, tight bandage over. Dressing with iodine renewed daily. No bad reaction, moderate suppuration, recovery in two weeks.

*Second*—Seen two hours and half after receiving the injury. The horse has dropped on the handle of a fork which, penetrated into the sheath, broke in two pieces, one probed its way near the anus and is pulled out that way, the other part of the handle drawn through the sheath. The tract between the two orifices cannot be traced with probes. Antiseptic injection reveals its presence. One injection of iodine is made and followed after, three times a day, with cresyld solution. Scarcely any reaction, little pus, convalescence on the fifth day.

*Third*—Heavy draught horse, gets a deep punctured and lacerated wound of the croup. The entrance is near to the coxo-femoral joint. It runs so that the sacrosciatic ligament is run through. Feces can be felt in the rectum, which seems unharmed. The wound is plugged with gauze dipped in antiseptic solution of iodine. The dressing is renewed for five days and continued with cresyld injections. On the sixth day defecation and micturition are getting painful. Rectal examination revealed the presence of a purulent collection which is squeezed out by the healing surface of the wound. Treatment is kept up. Discharge continues for four months and finally recovery followed. This case was seen an hour after the accident. Conclusion of the author: with attendance applied early, one may hope for success in cases even that are most dangerous in appearance.—(*Presse Veter.*)



TOXICITY OF PULVERIZED BORIC ACID AS EXTERNAL DRESSING [Mr. Charmoy, *Adjunct Professor*].—In September, 1906, there appeared a very important recommendation of the safe use of pulverized boric acid in the treatment of wounds, to which the REVIEW alluded in a later Chronicle.

Professor Charmoy has tested the value of the same treatment and in several articles where he reviewed the subject he gives the record of his observations carried as experiments in eight cases where the results were entirely different and, of course, his conclusions not in accordance with those previously mentioned. Applied in dogs, the professor states: "1. Boric acid in powder, used in dogs, as external application on wounds is toxic at a dose varying between 2 gr. 5 and 3 gram. for each kilogram of the animal, when he is in satisfactory condition of health.

"2. The toxicity is much greater with animals already affected with chronic disease, especially nephritis or skin affection.

"3. The symptoms of the intoxication, though varying in animals and according to the dose, are characterized at the start by dullness, difficulty of locomotion, slight acceleration of the great functions; afterward by vomiting, diarrhoea and lowering of the temperature; at the end by complete muscular resolution, sometimes blood in the feces or vomits and by albuminuria. Death occurs in hypothermy and coma.

"4. Death seems due to the rapid evolution of acute nephritis and nervo-muscular paralysis."

Boric acid in powder is not a harmless drug and at no matter in what dose its use ought not to be generalized.—(*Rec. de Med. Vet.*)

PERITONITIS BY TRAUMATIC SUPPURATION OF THE GLUTEAL REGION [Mr. Augustin, *Army Veterinarian*].—Ten-year-old horse, harnessed to iron ploughing machine, runs away, falls and two teeth of the instrument enter in the gluteal and posterior crural region, making wounds 15 centimeters deep. The wounds are irregular, bleeding abundantly; their edges are ragged. A free incision unites the two tracts and a proper treatment prescribed. A very severe reaction takes place, enormous swelling is found and abundant suppuration follows. The traumatic fever is intense and lasted eight days, after which it subsided. The condition of the animal is bad and he is found dead in the morning. The post mortem revealed lesions of very acute pelvi-peritonitis, with two litres of fluid in the peritoneum. The dissection



of the wounded region exposes two tracts, one running through the mass of the semi-tendinosus and biceps femoris muscles to reach behind the femoro-tibial joint. The other passing upward, back of the coxo-femoral articulation through the small gluteus and entering the pelvis through the great sciatic notch, where it infected the parietal sheath of the pelvic peritoneum.—(*Rev. Gen. de Med. Vet.*)

OSTEOMAS OF THE DURA MATER [*Dr. Marchard and Prof. G. Petit*].—In a communication made by the professor some time ago on the pathogeny of ossifying spinal pachymeningitis of dog he concluded in saying that:

1. The pathogeny of osteoma of the dura mater in threads or in plates like that of most osteomas in general is unknown.
2. Contrary to the classical opinion, those osteomas which result from a slow and altogether metaphysical transformation of the fibrous tissue do not correspond at all to a pachymeningitis.
3. Again contrary to what has always been said they do not, in the immense majority of cases, have any morbid action whatsoever.

As evidence, a case is reported of a dog affected with paresis of the hind legs by myelomalacia of vascular origin where osteomas of the dura mater were detected at the post mortem. The dog had only a slight paralysis of the hind legs, and presented on the dura mater osseous plates, principally abundant in the lumbar region. They had no part in the pathogeny of the nervous troubles which were due to lesions of the spinal cord, where centers of myelomalacia, degeneration of softening were detected by lesions of the blood vessels.—(*Bullet. de la Soc. Cent.*)

TWO CASES OF IMMOBILITY [*MM. Rousseau and Chicou*].—Immobility is often diagnosed only at the last stage of the disease. The authors suggest that a diagnosis could be made before by close attention and by the peculiar history of the case. From the two cases recorded it appears that the characters of the two animals pointed out at prodromes of the final ailment. They are considering that ugly horses, those that have a tendency to run away, that are nervous, irritable or even those that have the habit of pulling backward when tied up in their stall, all are subjects which may prove in the end to become immobile.

At the post mortem of the two cases reported one had an abscess of the dura mater and two globular neoplasms in the lateral ventricles developed in the choroid plexuses; they were

cholesteatomas of the cerebral choroid plexuses. In the other horse the pia mater was hyperemic, and the cerebral ventricles somewhat dilated, contained 25 c.c. of arachnoid fluid.—(*Rev. Veter. Milit.*)

INTESTINAL OBSTRUCTION—CECAL CALCULUS—RUPTURED ANEURISM OF THE INFERIOR CECAL ARTERY [*Mr. Magnier*].—Nine-year-old mare has had several attacks of chronic enteritis. One day she is sick again, has intermittent colics which disappear rapidly. She has them for one week and shows symptoms of intestinal obstruction. Treated, she improves and then has another attack more severe, and finally dies with evident intestinal hemorrhage.

*Post Mortem*.—Cecum black and ecchymotic, has a ruptured aneurism at the origin of the inferior cecal artery; in the cavity of the cecum there is a bezoard calculus weighing 2 kilog. 450 gram.; the large and floating colon showed lesions of chronic enteritis.

During life the mare assumed the dog or sphinx laying down position, she gaps repeatedly and almost continuously; when she was to be mounted by her rider she tried to bite him and moaned when he sat in the saddle, she could not gallop on the right, toward the last of her life she always laid on the left side.—(*R. Veter. Mil.*)

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DR. G. A. KAY, B. A. I. SERVICE, has been transferred from South Omaha, Neb., to Lincoln, that state, and made "Inspector in Charge" at his new post. We congratulate the doctor on his promotion.

THE TURKEY BUZZARD AS A CARRIER AND TRANSMITTER OF ANIMAL DISEASES is the title of bulletin No. 71 issued by Dr. George R. White, State Live Stock Inspector of Tennessee, to the farmers of that state.

A FRIEND IN NEED.—An Iowa subscriber writes: "I need the REVIEW in my business, it aids in time of trouble."

## CORRESPONDENCE.

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### HORSES IN THE TROPICS.

FORT WM. MCKINLEY, PIZAL, P. I., November 6, 1912.

*Editors AMERICAN VETERINARY REVIEW, New York:*

Replying to an article which appeared in the August REVIEW, under the heading "Horses in the Tropics," let us search a little deeper than the color of the skin for the cause of nervousness.

The writer unconsciously touches the keynote when he says, "On review the gray horses are actually phlegmatic, the sorrels quiet, the bays excitable and restless, while the blacks are the worst of all."

The reason is plainly not due to the coloring, but to the breeding. Fully 90 per cent. of the grays are grade Percherons, phlegmatic in type, gentle and quiet, and a disposition to take life as easy as his surroundings will permit. This will hold good whether he is in a hot or a cold climate.

A large percentage of the sorrels have a trace of Morgan (the ideal family pet for a *lightweight horse*), quiet and gentle in disposition, though with more life and spirit than the Percheron, yet easily controlled; or from the hackney, who, while high stepping and proud, are easily managed and sensible.

And lastly the browns and blacks, "the most excitable and restless of all."

The reason for this is easily found. With the exception of the heavier horses, which I will speak of later, the majority of the bays and blacks are grades, either from the standard bred or the thoroughbred, the two most vicious, excitable and unmanageable breeds of horses we have to contend with in the army. This temperament of the thoroughbred is well known and conceded by all standard works on horse breeding.

The remaining gray horses (other than the Percherons), used in the army, are largely of Arabian blood. Those foaled in the states are usually from some imported Arabian stallion, and those used in the Philippines come from Australia and are a mixture of Arabian and thoroughbred, or to a lesser extent the native Australian pony.

The well-known high-strung, nervous temperament of the

Arabian and his descendant, the thoroughbred, is too well known among horsemen to require further comment here, and those who breed back to the white color of the Arabian show up as nervous and excitable as do the bays and blacks of equal amount of Arabian blood.

Yet, if the color theory held good, we would find the grays phlegmatic, and the bays and blacks excitable and restless, which is not the case. With but few exceptions (which is bound to occur in all-breeds) the horses of one breed, regardless of color, all seem to possess about the same disposition.

Now let us take up the horses of the field artillery. In Batteries "A," "B" and "C," First Field Artillery, for which I am at present attending veterinarian, there are about twenty gray horses in about five hundred, the remainder being bays, browns and blacks.

Now, if this "unknown relation between color and nervousness" held good, we should expect to find the grays phlegmatic, and the bays and blacks excitable and nervous. But here again we would be disappointed, as the bays and blacks are as quiet and sluggish as the grays, thus pointing away from "tropical influence on color" and toward the breeding.

The artillery horse is primarily a draft horse, and he averages from 150 to 250 pounds heavier than the cavalry horse. Consequently his breeding must be different, in order to attain greater weight. We find occasionally a few grade French and German coach horses, while probably one-third are Percheron grades, but the majority are Clydesdales, noted the world over for their gentle disposition, and the effects of the tropics have failed to work any change in them.

Occasionally we get a few Clydesdales in the cavalry when the cross-breeding has produced a horse sufficiently light and active to do cavalry work. These horses are known among the men as "Chubbies." They are short and blocky and of splendid disposition. While not quite so active and quick at drill, they have wonderful staying qualities on hard marches and short rations.

Now, as to the reason for the gray horse living longer in the tropics, we can also include the bays and blacks, who are grades from Percheron or Clydesdale blood.

When the Percheron or Clydesdale starts out for the day's march, he quietly settles into his task with as little outlay of unnecessary energy as possible, and if not reined in too tightly

will try and pick his path, and when halted for rest and readjustment of equipment he immediately begins to search for something to eat. It may be only a few green leaves or weeds, or a bunch of dead grass, but it is astonishing how much it seems to refresh him and keep up his strength.

On the other hand take the grade thoroughbred. The first thing, he proceeds, with varying success, to buck his rider off, throw his pack out of balance and adjustment, which is a sure "saddle-sore getter." In his fight with his rider he is worked into an excited condition, and starts down the road with his forefeet in the road and his hind ones in the ditch, or vice versa, and prances ("jigs," the soldiers call it) till he has expended his last ounce of strength and energy (and also that of his rider), and then he gives out before the march is finished. I have seen horses exhaust themselves in this way and have to drop behind the column and be led the last five or ten miles of march, and then repeat the same process several days in succession.

This is the reason why the gray horses have a longer life than those of the lighter weight breeds, and this same rule will hold good in the northern states, where the tropics are not a deciding factor.

Another reason (among army horses) is this: I have before me the sick records of the Seventh Cavalry horses while at Fort Riley, Kansas. The horses of Troop M were all grays, with the exception of seven or eight, which were blacks. The sick report for the year 1910 showed a total of 90 cases, while Troop G, a bay troop, composed largely of grade thoroughbreds, had a sick report of 166 for the same period. Troop M averaged one new case every four and one-eighteenth days; Troop G averaged one new case every two and one-fifth days. Troop M's average period of sickness per horse was 15 days; Troop G's average period of sickness per horse was 22 days. Giving for Troop M a daily sick report of three and five-sevenths horses; Troop G, a daily sick report of ten horses.

I am submitting these figures to show that the gray horse is less liable to disabilities, regardless of what climate he is in.

Eliminating the saddle-sores from the records of both troops, which were about equal, the percentage of other sicknesses and injuries was still larger in favor of the grays.

The general average of the age of the gray troop was considerably larger than in the bays, and therefore they had had more years of service in which to accumulate chronic saddle-



sores. Even with this handicap, they compared favorably with the bays.

The diseases of the feet, which form no small part of the disabilities of the army horse, are corns, canker, thrush and navicular disease, due largely to the army horse being kept constantly shod all the year. In Troops M and G the percentage of corns were about equal, but, due to the hoofs of the gray horses being slightly larger and more flat, the heels broader, the frog larger and therefore with more frog pressure on the ground, the percentage of canker, thrush and navicular disease was largely in favor of the grays.

The gray horse's feet being flatter, theoretically he would be more predisposed to laminitis when on the hard roads. This was not borne out by experience, however, due, probably, largely to the grade Percheron traveling low, thus avoiding the concussion incident to higher action, and also to his natural disposition to take better care of himself.

The injuries, self-inflicted and those inflicted by their mates, form the greater portion of the sick records, and is largely in favor of the grays. This will not seem strange after observing the horses loose in the corrals.

The gray horse, after his work is finished and he is turned into the corral, will hunt up a bit of rope, a broken halter shank, an old grooming cloth, or some such object, and go away by himself and nibble and play with it for hours, or if the flies are bad, he will hunt up his mate (nearly all horses choose a corral mate), and they will range "alongside," but headed in opposite directions, so each can switch the flies off the neck and shoulders of the other, which each cannot reach with his own tail.

Go to the corral of the bay horses, and instead of resting when they get the opportunity, they are racing back and forth, biting and striking, and as for switching flies, they seem to prefer the use of their teeth and nails. There are more injuries self-inflicted and by their mates than in "line of duty." And there are more injuries to treat at evening stables (provided the horses have been loose in the corral) than after returning from morning drills.

For 1910, Troop M's sick record shows, injured by other horses, 2; Troop G's sick record shows, injured by other horses, 21.

Those injuries are usually severe, are penetrating wounds, and therefore usually deeply infected, and account for the longer average sick period.

I believe that color plays no important part in the long life or the ability to stand the tropics, only insofar as it becomes characteristic of a certain breed, and that the *breeding* and *not* the color is the deciding factor.

From observations I am of the opinion that if we have a cross between a black or brown Percheron stallion and a mare of no special breeding, resulting, as they frequently do, in a roan or a bay, that they will be as quiet and long lived as those bred from the gray stallion.

At the present time there are bay horses in the Seventh Cavalry, now at Fort McKinley, that show Percheron and Clydesdale blood. The records show that those horses came over here from the States with the first expedition mounted. Some of them are over twenty years of age and are still doing duty with their gray brothers that came over at the same time.

I wish to distinctly emphasize the fact that in this article I am not advocating the purchase of any particular type of horse for the army. That is entirely another question. The point for consideration in this article was, What influence, if any, has color on the temperament, stamina and long life of the horse in the tropics?

Very respectfully,

W. C. VAN ALLSTYNE, M.D.C., V.S.,  
Veterinarian, Seventh Cavalry, Philippine Islands.

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## IS THE AMERICAN VETERINARY MEDICAL ASSOCIATION A NATIONAL ORGANIZATION IN FACT AS WELL AS IN NAME?

*Editors AMERICAN VETERINARY REVIEW, New York:*

The question we have frequently asked ourselves during the past few years, and more particularly since the close of the Indianapolis meeting, is, "Is the American Veterinary Medical Association a national organization in fact as well as in name, or does it truly and adequately represent in a national capacity the veterinary profession, with its vast membership, on this great continent?"

We would like, with your kind permission and co-operation, to discuss this problem with a view of getting an expression of opinion from your journal and from its readers.

The first phase of this important question, that strikes us most

forcibly, is the comparatively small membership. It would appear in view of the large number of veterinarians in the United States, Canada and our insular possessions, that the percentage of A. V. M. A. members is so small as to be almost insignificant. Does it not seem possible and probable that there is some influence or element at work that is responsible for the anemic condition of our membership roll? Is it not reasonable to ask why it is almost necessary to anesthetize a man before he will affix his name to an application blank? Another question prompts itself to the effect that it would be most interesting to know what the A. V. M. A. has accomplished in the past few years, as a national organization, for the benefit of the veterinary profession and for the public at large.

The constitution of the A. V. M. A. states that the purposes of the association are, to promote good fellowship; to elevate the standards of veterinary education; to cultivate medical science and literature; to enlighten and direct public opinion regarding veterinary problems of state medicine; to protect the medical interests of the veterinary profession and present to the world its achievements.

Have any of these purposes or objects been accomplished, or have they been carried out to the extent anticipated by the founders of the association? Are we to consider it incumbent upon us to carry out these constitutional provisions, or are we to look upon Article II. of the constitution to be in the nature of a bluff? Perhaps some of these provisions have been carried out in part, but what has the national association accomplished more than has been or is being accomplished by any little unpretentious state association composed of half a hundred members?

In discussing some of these problems, we propose to be entirely frank in the premises, hoping to be able to encourage others who, we trust, will avail themselves of your kind offices to enter into the discussion in a similar spirit.

Perhaps the main obstacle which has been and is hampering the progress of the A. V. M. A. is the fact that its affairs are manipulated and controlled by a small coterie of men who, geographically and professionally, represent but a small portion of the American continent. Perhaps we may go farther and venture to say that the national organization is controlled and manipulated by a few men, whose numbers can be estimated upon the fingers of a normal hand. We frankly admit that we are most willing and ready to do homage to any individual or indi-

viduals who are big enough to control a national organization and its policies, even if their views do not harmonize with ours, but at the same time we feel that the methods enlisted in gaining and maintaining such control should be, in the case of the A. V. M. A., carefully analyzed.

The writer, among others, believes that any one who has attended the meetings and has studied the internal workings of the A. V. M. A. must have been struck with the character of the politics pursued by a certain element, in order to control and dominate its policies almost since its inception. To a student of such matters the affairs of the national organization seem to be in the hands of a political trust, who do not hesitate to resort to any kind of tactics to accomplish their objects. In other words, they appear to work on the assumption that the end justifies the means.

If attempts, which have been frequent in the past few years, are made to overcome these conditions, such attempts are frustrated by methods that are despicable and dishonorable, to say the least. If new or young blood is offered for injection into the body politic, for the purpose of stimulation and perhaps rejuvenation, it is attacked by scurrilous innuendos and insinuations to such an extent that a self-respecting aspirant for political honors at the hands of the association is debarred from further participation, as he would naturally prefer to relinquish his candidacy and deny himself such honor rather than be exposed to unrighteous vilification, fostered as a result of intrigue and mendacity on the part of those who oppose for selfish reasons his candidacy. All this goes to show that there is an influence or an element at work that will stop at nothing, no matter how despicable it may be, to gain their ends.

It is believed that those who attended the Indianapolis meeting will agree with us that the manner in which the affairs of the association were administered was not only pathetic, but deplorable. The scene depicted during the evening, when the order of business was the election of officers, had much to recommend it as a prize exhibition of buffoonery. The entire session was an exhibition of improper conduct on the part of the temporary presiding officer, who resorted to or indulged in repartee and parliamentary usage of a very questionable character. The temporary presiding officer on that occasion was presumably acting according to instructions, and it reminded the spectator of nothing so much as steam-roller politics, which would not be out of



place at a political ward gathering, where a slate was the order of the day.

Can we wonder at the standing of the A. V. M. A., when such scenes can be enacted during what is supposed to be a gathering of dignified and scientific men, whose purpose is or should be the advancement and elevation of the profession and the promulgation and dissemination of knowledge for the future benefit of mankind. Can we expect men to travel hundreds or perhaps thousands of miles for scientific enlightenment when such conditions continue to prevail?

When the California delegation reached the Middle West before the Indianapolis meeting, it was approached with a tentative proposition to the effect that the profession on the Pacific Coast be requested to join with the profession in the Middle West to secede from the A. V. M. A. and form another organization, national in character. It is, perhaps, unnecessary to say, the California delegation refused to consider such a movement and stated emphatically that it would stay with the now national organization until the last gun was fired. Furthermore, it stated that it proposed to do everything within its power to make the present A. V. M. A. representative in character and a national organization in fact as well as in name.

One of the reasons given by the profession in the Middle West as an excuse to secede, and one of the main reasons why a division seemed advisable, is to the effect that under the present conditions the West or Middle West has no voice, nor representation as far as the administration of the affairs of the A. V. M. A. is concerned. We believe that the contention of the Middle West is correct, and we feel that those of us from the far West are to some extent in a similar position; at the same time we believe that this entire question resolves itself into one of adjustment of the affairs of the national society, so that every section of the country will have some voice in its administration.

We hold that the reorganization of the national association is the solution of the problem. Let us reorganize upon modern and progressive lines, and let us do away with the antiquated, medieval or obsolete constitution and by-laws that permit a few individuals to dominate and control matters for their own aggrandizement. Let us infuse some new blood and other things that stand for modernity and progress, and let us frown down upon anything and everything that savors of chicanery and iniquity.



Why not, Mr. Editor, reorganize the A. V. M. A. on such a basis that a component society of each state, province or territory would be represented according to its membership, one delegate for every so many members or fraction thereof? Such representatives to form a house of delegates and constitute the administrative body of the association. Thus every section of the country would be represented and be entitled to participate in all business deliberations, and at the same time, which is the most important feature of all, the scientific and literary program of our meetings would not be interfered with by business or politics.

A house of delegates, as suggested above, and a secretary, whose entire time would be devoted to association matters, would mean an enormous increase in our membership and at the same time would have a tendency to cement a union between the various sections of this great continent that could only result in inestimable benefit to the profession in general and the public at large.

The California State Veterinary Medical Association has appointed a standing committee for the purpose of inaugurating a campaign whose ultimate object is to assist in the upbuilding of the A. V. M. A. to the point of efficiency where it must be recognized as one of the most important scientific organizations in existence, and, with a view of stimulating improvement, and reorganization if necessary, the committee, through its chairman, the writer, desires to announce that it is particularly desirous that other state associations will join in such a campaign and attack this problem with it.

R. A. ARCHIBALD,

Chairman Committee on American Veterinary Medical Association Affairs.

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A CORRECTION.—As the result of a typographical error the word *goneitis*, fourth word, sixth line, page 310, December REVIEW, occurring in Dr. Cochran's article on "stifle lameness," was spelled gonlitis. The printers mistook the script e for an l, and it was missed in the proofreading.

THE CHRISTMAS NUMBER OF THE FARMER'S ADVOCATE, Winnipeg, has just reached us, and certainly is a credit to its publishers. We regret that it did not reach us while we still had room to express our appreciation of it fully.

## BIBLIOGRAPHY.

### IMMUNITY.

**IMMUNITY—METHODS OF DIAGNOSIS AND THERAPY AND THEIR PRACTICAL APPLICATION**, by Dr. Julius Citron, Assistant at the University Clinic of Berlin, Medical Division, translated from the German and edited by A. L. Garbat, M.D., Assistant Pathologist, German Hospital, New York. 27 illustrations, 2 colored plates and 8 charts. Philadelphia, P. Blakiston's Son & Co., 1912. \$3 net.

*Immunity* is a work designed to serve a purely practical purpose, in familiarizing the student and practitioner with the methods of serum diagnosis, which, on account of their growing clinical significance, are constantly stimulating greater interest in all branches of medical science. The German author, while giving instruction on the subject, realized that it would be of great help to both the medical student and the physician to possess a short text-book which would review in a purely critical form the various methods of immunity diagnosis; and as the two systems of *Kolle* and *Wassermann* and *R. Kraus* and *Levaditi*, which are the standards on the subject in German medical literature, are large and expensive, being more suited to the specialist, it was the aim of the author to produce a work in a more concise and more simple form, adaptable to the general practitioner who wishes enlightenment on the subject, rather than to go into an exhaustive study of it.

The chapter on vaccines has been slightly revised and elaborated to conform more closely with the most recently advocated methods of Sir A. E. Wright, otherwise the American author has found no need to alter the original text, except that occasionally some features, thought to be of especial interest to the English-reading public, have been inserted. And while the book was especially written for medical students and practitioners, we are sure that the chapters on anti-rabic vaccination of man, tuberculin diagnosis, agglutination (macroscopic, microscopic and group), the method of complement fixation with the Wassermann-Bruck's modification and the technique for the determination of the opsonic index, will be just as interesting to the progressive veterinarian as to the physician. The author also alludes to the place attained by mallein as a diagnostic of glanders in veterinary medicine. Colored plates, showing the Pirquet reaction and the ophthalmalmo-reaction for tuberculosis in the human, are very clear and very striking. The paper is good; the type clear, and, in fact, the publishers have spared no detail in making the work one that any physician or veterinarian may be proud to possess.

## PHARMACEUTICAL BACTERIOLOGY.

PHARMACEUTICAL BACTERIOLOGY, WITH SPECIAL REFERENCE TO DISINFECTION AND STERILIZATION, by Albert Schneider, M.D., Ph.D., Professor of Pharmacognosy, Histology and Bacteriology, California College of Pharmacy; Pharmacognosist, United States Department of Agriculture; with 86 illustrations. Philadelphia, P. Blakiston's Son & Co., 1912. \$2 net.

*Pharmaceutical Bacteriology* should find a welcome place in the library of all progressive veterinarians, most of whom are in reality practicing pharmacists. Comparatively speaking, the science of bacteriology is not new, but its introduction into pharmacy is of very recent date; and yet, the pharmacist *should* have a fair knowledge of *general* bacteriology, in order that he may realize what important relationships bacteria bear to medical and veterinary practice. He should know what pharmaceutical preparations and what medical substances are likely to be attacked by bacteria, and what changes they are capable of producing in such substances.

This little volume is the product of the progress incident to the recent growth and development of the professional side of pharmacy, and the object of the author has been to adhere strictly to the subject from the standpoint of the pharmacist, with only enough treatment of general bacteriology to make clear the collateral relationships, especially as it pertains to medical bacteriology. And yet, when one glances through the work, the impression that all the bacteriology that a practitioner can ever absorb or apply is contained in the little work, seems evident. And as a matter of fact, it is the practical side of bacteriology that is presented. Following the introduction and the general morphology and physiology of bacteria, comes their range and distribution, then bacteriological technic, bacteria in the industries, giving the function of bacteria in agriculture, in milk and in the dairying industry, rotting bacteria, cider making, etc.; immunity, natural and acquired, Ehrlich's side-chain theory, toxins and antitoxins, agglutinins, precipitins, lysins, opsonins, etc. The manufacture and use of sera and vaccines, and a thousand and one practical applications of pharmaceutical bacteriology.

Disinfection and sterilization receive *especial* attention, and altogether *Schneider's Pharmaceutical Bacteriology* is an essential to the up-to-date, progressive veterinarian or physician. As in the former work by the same author, material and workmanship have not been spared in its production.

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## OBITUARY.

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### WILLIS WARD CURRY, D.V.S.

Dr. Willis Ward Curry died at Oradel, N. J., on December 7, 1912, suddenly, from hemorrhage of the lungs, in the fifty-third year of his age, although the doctor's health had been failing for some time.

Dr. Curry was born at Mahopac Falls, Putnam County, N. Y., April 29, 1860; his parents (both deceased) having been Peter B. and Elizabeth R. Curry. The doctor received his early education in the public schools of Putnam County (N. Y.) and the Albany State Normal School. On reaching manhood, his love for animals prompted him to take up the study of veterinary medicine, and he entered the American Veterinary College, New York City, from which institution he graduated in 1888 and served in the hospital as House Surgeon under Prof. Liautard; afterward accepted appointment in the B. A. I. service, stationed at Jersey City, and finally, in 1890, entered into general practice in Hackensack, N. J., where he enjoyed a successful practice and the confidence and respect of the community up to the time of his failing health some months ago. Dr. Curry was married in June, 1890, to Elizabeth Courtney Shackelton, of Hackensack, who survives him.

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### KIND EXPRESSIONS OF SYMPATHY ACKNOWLEDGED.

Complying with a request made by Arthur S. V. Brenton that the REVIEW publish the details relative to the sudden death of his mother, in view of the fact that the family has been overwhelmed with letters and telegrams, which in the depth of their grief they feel unequal to answering, yet desire to thank their many friends for their expressions of sympathy, we give the following details, extracted from her son's letter of December 13, 1912. Mrs. Brenton, though robust in appearance, had been ailing for about

ten years, and about six years ago her physician pronounced her case diabetes mellitus, for which condition she had been treated and dieted ever since; and it was her thorough and intelligent comprehension of her condition and her care and strict dieting that kept her in such apparently good health, despite her malady. She had frequently expressed how well she enjoyed the A. V. M. A. meeting at Indianapolis after her return home from that city, but seemed to dread the approaching winter, and was about to make arrangements to go south during the cold weather, when she was stricken down. She had overexerted herself in the early part of the week in which she died, but did not seem to evince any bad effects from it until the middle of the week, when after an automobile ride with her son, Dr. Willis L. Brenton (during which she expressed great delight and enjoyment, meeting many friends during the ride), on returning home she became suddenly very weak and had to be lifted from the car. She soon recovered from this weak spell, however, and began attending to the preparation of supper. That was on Thursday evening, and the following morning the weakness returned, and she made vain attempts to tell about her ride of the afternoon before, but was so weak she could not finish out a connected sentence. She continued to grow weaker until about two o'clock in the afternoon, when she was put to bed, when she soon sank into a comatose state, from which she never aroused, but passed to her Heavenly Father the following noon (Saturday, November 23), surrounded by the members of her family and her physician at her bedside. She was buried in Grand Lawn Cemetery with Episcopal services on Tuesday, November 26, 1912. Mrs. Brenton was born in Geelong, Australia, fifty miles from Melbourne, and came to this country when a girl of sixteen. Had she lived until December 1, 1912, she would have reached the thirty-second anniversary of her marriage to Dr. Samuel Brenton, which occurred in Jackson, Mich., in 1880. Besides her husband, she is survived by three children, Arthur S. V. Brenton, Dr. Willis L. Brenton and her daughter, Mrs. A. P. Schiffer.

DR. E. M. HERRIN, of Edwardsville, Ill., an old subscriber to the REVIEW, died in May last, but it was not until his subscription expired that the REVIEW learned of his death. Hence the late notice.

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## SOCIETY MEETINGS.

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### NOTES ON THE RECENT MEETING OF THE UNITED STATES LIVE STOCK SANITARY ASSOCIATION AT CHICAGO.

The yearly gathering of this truly representative body, including stock breeders as well as sanitarians from almost every state in the union, which convened at the Hotel Sherman, Chicago, December 8, 1912, seems singularly appropriate as to time and place, occurring as it does simultaneously with the annual International Live Stock Show, which represents the sum total of human achievement in the science of stock breeding, as does the yearly meeting of this great sanitary organization bring forth all that has yet been revealed in that branch of veterinary science devoted to live stock sanitary control.

The association was welcomed to Chicago in a brief but forceful address by Dr. Geo. B. Young, Health Commissioner of the city, who said, in substance, that control over live stock sanitary matters would be accomplished in proportion to the degree in which public opinion was aroused thereto, and referring to the inability of the city of Chicago to demand milk from tuberculin tested herds owing to the anti-tuberculin laws of Illinois, stated that in his belief it would be difficult in Illinois in the future to enact any legislation adverse to sanitary progress, simply to enhance the political fortunes of any candidate for public office.

Dr. Peter F. Bahnsen, of Georgia, who later was elected president of the association, responded in his inimitable manner which is so fully appreciated by his large host of friends.

The address of the retiring president, Dr. M. P. Ravenel, of Wisconsin, embodied data gathered from the reports of the British Royal and German Imperial Commissions on Tuberculosis; and, together with his own authoritative opinions, demonstrated still further the danger, especially to children, of bovine infection. The figures are omitted here, but they are startling.

Dr. Ravenel, who is an ex-president of the National Association for the Prevention of Tuberculosis, stated that one section of next year's meeting of that body was to be given over to veterinarians, and also that the meetings of the Philadelphia Path-

olōgical Association were open to veterinarians. He stated that inasmuch as the two professions overlap, veterinarians should be members, and vice-versa, the society meetings of the two professions being open to members of either.

In view of the conflicting laws of the several states he urged the united efforts of both professions for the establishment of a central body, in which both physician and veterinarian would be given representation. Allusion was made to the proposed establishment of chairs of comparative pathology in some of the medical colleges, by which the future medical practitioners might be better enabled to co-operate with veterinarians in matters of sanitary reform.

The essays and discussions on tick fever were supplemented by a moving picture exhibition, showing the evolution of the tick and the methods now in use in the South for its eradication. Unlike some of the other communicable diseases, with this, there seemed to be no division of opinion as to the right way to proceed in its eradication, and the reports submitted showed a greatly increased area of territory released from quarantine. Mr. W. L. Wardell, chairman of the Live Stock Commission of Texas, introduced a motion which was unanimously adopted, pledging each member present to visit or write his congressman and senator to urge an increased appropriation for tick eradication and for the Bureau of Animal Industry in its routine work.

The enthusiasm of the essayists and those who participated in the discussion of this subject, which seems to have been so thoroughly worked out, was most certainly inspiring.

Directly and indirectly the tick is responsible for an annual loss of over one hundred million dollars in the South, and its eradication is made possible by ten to sixteen dippings at intervals of fourteen days, at an average cost of ten cents a head.

The tuberculin test, after thorough discussion of the question, received almost unanimous indorsement, and each succeeding year seems to establish more firmly, when used by such men as are truly competent, its right to be very highly regarded as a diagnostic agent.

The abuse of tuberculin by men of insufficient education and experience is the cause of its ill-repute in some localities, and emphasizes the need for renewed efforts to restrict its use to thoroughly trained men.

The paper entitled "The Value of Physical Examination and Clinical Diagnosis in Detecting Tuberculosis in Cattle," pre-

sented by Director V. A. Moore, of the New York State College, was heard with deep interest, befitting the profound knowledge of the author. It appeared, however, that the majority of those who heard this essay were still of the opinion that the value of physical examination as a dependable means of detecting even the so-called spreaders, and thus of being a factor of equal value with tuberculin, is greatly overestimated. A movement to free the pure-bred herds of the United States from tuberculosis, requiring same to be free from this disease, in order to be eligible to advanced registration, was described in a paper read by Dr. O. E. Dyson, of Illinois.

Probably the most spirited discussion of the entire meeting followed the reading of the papers on "Hog Cholera" by Drs. Reichel, Fischer and Peters. It was the serum-simultaneous vs. the serum-alone method; and it must be said that the adherents of the serum-simultaneous method had the better of the discussion, the end of which would not yet have been reached, were it not for the time limit of five minutes placed upon each individual in the discussion, which, by a vote of the members, was afterward increased to ten minutes, as the importance of the discussion became more apparent.

The importance of hog cholera control to the entire United States may be judged by the \$15,000,000 loss in Iowa during one year.

The successful use of the serum-simultaneous method depends upon the ability of the operator to comprehend the potency for good or evil of the virulent blood, and his willingness to observe with scrupulous care the technique formulated by careful workers. Used by such men, both its safety and efficacy were attested by Drs. Paul Fischer, of Ohio, and A. T. Peters, of Illinois, as well as others, whose wide experience gave weight to their words. Dr. Peters, stating that so much depended upon a full comprehension of the technique that it had been found necessary in Illinois to require those men unfamiliar with same to visit the station, and there, under careful eyes, to go through the whole procedure again and again, until they showed a thorough understanding of each step. The failure of this method, in some instances, to accomplish what had been expected, was said to be due to highly virulent blood and a serum of low potency, in which case a fatal attack would be caused; or to a blood lacking in a high degree of virulence, failing to produce the expected immunity; or to the neglect of the operator to observe the proper ratio between the dose of the virulent blood and the protective serum. To sum-

marize, the advantage of the V. B. method is the permanent immunity conferred, the disadvantage being the possibility of the spread of infection when carelessly used. The serum-alone method confers usually no permanent immunity; neither is its use attended by dangers of the spread of infection. The essentials for the successful use of the serum-simultaneous method are standardized products, V. B. and serum of known potency, together with carefully trained and conscientious men for their use; and where this combination exists, there should be no hesitancy as to which method to choose.

Dr. Fred Torrance, Veterinary Director-General of Canada, gave a brief outline of the existing sanitary regulations of his country, the items of greatest interest, being the progressive lowering of the number of cases of glanders under the plan of compulsory slaughter of reactors to mallein. It is to be hoped that a similar regulation may be found to be practicable in the State of New York ere long.

Dr. W. L. Williams presented a paper, illustrated with stereopticon views and elaborate tables, in which he summarized his experience with infectious abortion of cattle and the treatment thereof with *Abortus Bacterin*, as well as results of efforts to diagnose the presence of the infective agent by use of a biological product, called Abortin. To many who had perhaps hastily accepted the unqualified statements regarding the value of these products, Dr. Williams' paper was a revelation, inasmuch as his carefully conducted tests indicated the worthlessness of both. Future research and experiment may reverse his judgment; meanwhile it behooves the busy practitioner to proceed cautiously in the use of these and the many other biological products with which the market is flooded.

The recent horse plague in Kansas, Nebraska and other states was the subject of a paper by Dr. A. T. Kinsley, of Missouri, and was well and thoroughly discussed by those men whose scientific attainments had led to their assignment in the work of investigation. Among these may be mentioned Drs. Mohler, Connoway, Tait Butler, Gibson, Hughes, Kaupp and others. In a majority of those who spoke, the opinion was given that the disease was a forage poisoning, careful investigation and examination failing to reveal any specific micro-organism, and efforts to reproduce the disease by inoculation of spinal and cranial fluids being unsuccessful.

A paper of exceptional interest to all was presented by Drs. D. J. Healy and Joseph Castle, of Kentucky, in which they dem-



onstrated the probable determining factor in the onset of the pains of labor to be the calcium salts present in the normal colostrum of the mammaries, which are stimulated to production by the approaching completion of foetal development.

In the experimental work the subcutaneous injection of a small quantity of colostrum invariably producing abortion in guinea pigs; whereas the injection of milk and cream was borne with no bad results. Calcium lactate and calcium lactophosphate were injected and also caused abortion.

The Committee on Uniform Regulation submitted their report, a copy of which follows:

REPORT OF THE COMMITTEE ON UNIFORM REGULATIONS PRESENTED TO AND ADOPTED BY THE ASSOCIATION AT CHICAGO, DECEMBER 5, 1912.

Section 1. The importation by railroad, boat, in wagon, by express or other common carrier; on hoof or in any other manner, of live stock diseased or exposed to disease into the State of ..... is hereby prohibited; and to determine which fact the following regulations shall be observed by all persons, firms, transportation companies, corporations, express companies and other common carriers; State Veterinarians and all other officials State and Federal, authorized to inspect and issue certificates of health for live stock.

Sec. 2. It is hereby ordered that any person, firm, corporation or any common carrier wishing to import bulls, work oxen or female cattle over six months old not intended for immediate slaughter, into the State of ..... must procure before shipment a health certificate and a tuberculin test chart in triplicate from a Veterinary Inspector of the B. A. I., the State Veterinarian or Assistant State Veterinarian, or a Veterinarian whose competency and reliability are certified to by the authorities charged with the control of diseases of domestic animals in the State from which the cattle are to be transported or moved. The original of this health certificate and tuberculin test chart must be attached to the waybill. The duplicate health certificate and tuberculin test chart must be sent to the State Veterinarian or proper official at destination in ample time to reach him before the arrival of the cattle. The triplicate health certificate and tuberculin test chart must be sent the proper State official at place of origin. The health certificate and tuberculin test chart must show that the cattle are free from Texas fever ticks, tuberculosis and all contagious, infectious and communicable diseases. The tuberculin test chart must show that at least three temperatures were taken before injection of tuberculin two to three hours apart and five temperatures were taken after injection two hours apart, beginning ten hours after the tuberculin was injected.

Sec. 3. It is hereby ordered that any person, firm, corporation or any common carrier wishing to import horses, mules or asses into the State of ..... must procure before shipment or movement in any other manner a health certificate and a mallein test chart in triplicate from a Veterinary Inspector of the B. A. I., the State Veterinarian or Assistant State Veterinarian, or a Veterinarian whose competency and reliability are certified to by the authorities charged with the control of diseases of domestic animals in the State from which the horses, mules and asses are to be transported or moved. The original, duplicate and triplicate copies of the health certificate and mallein test chart shall be handled as certificate and tuberculin test chart as provided for in Section 2. The health certificate and mallein test chart must show that the horses, mules or asses are free from all contagious, infectious and communicable diseases, and the test chart must show



that at least three temperatures two to three hours apart taken before injection and five temperatures were taken after injection two hours apart, beginning ten hours after the mallein was injected.

Sec. 4. It is hereby ordered that any person, firm, corporation or any common carrier wishing to import sheep or goats into the State of ..... for purposes other than immediate slaughter, must procure before shipment or movement in any other manner a certificate of inspection issued by an inspector of the United States Bureau of Animal Industry, certifying that the sheep or goats are not affected with any contagious, infectious or communicable disease, including scabies, and that they have been dipped once within ten days of time of entry into the State in either a nicotine or lime-and-sulphur dip which has been approved by the United States Bureau of Animal Industry. Provided, however, that sheep and goats not accompanied by certificate as above indicated may be shipped by rail or boat to points within the State of ..... if billed to or through public stock yards where Federal Government inspection is maintained, and there unloaded and dipped under the supervision of an inspector of the United States Bureau of Animal Industry.

Sec. 5. It is hereby ordered that any person, firm or corporation or any common carrier wishing to import swine into the State of ..... for purposes other than immediate slaughter must procure before shipment or movement in any other manner a health certificate in triplicate from a Veterinary Inspector of the B. A. I., the State Veterinarian or Assistant State Veterinarian or a Veterinarian whose competency and reliability are certified to by the authorities charged with the control of diseases of domestic animals in the State from which the swine are to be transported and moved. The original, duplicate and triplicate copies of the health certificate shall be handled as certificates and tuberculin test chart as provided for in Section 2. The health certificate must show that the swine are free from all contagious, infectious and communicable diseases and have been immunized against hog cholera by the Dorset-McBride-Niles Serum not more than thirty days prior to shipment.

Sec. 6. It is hereby ordered that cars, boats and other vehicles used in the transportation of all live stock into or within the State of ..... shall first be cleaned of all litter, washed and disinfected with a mixture made with not more than  $1\frac{1}{2}$  pounds of lime and  $\frac{1}{4}$  pound of pure carbolic acid to each gallon of water or liquid cresolis compositus (U. S. P.) (6) six ounces to every gallon of water.

Dr. J. A. KIERNAN, Nashville, Tenn.,  
Dr. M. E. KNOWLES, Helena, Mont.,  
Dr. J. I. GIBSON, Des Moines, Iowa,  
Committee.

Dr. C. A. Carey, of Alabama, spoke in strong terms of the need of instruction in the veterinary colleges of inter- and intra-state laws and regulations concerning communicable diseases of live stock and their movement, of which, he stated, so many practitioners were ignorant. Besides those previously referred to, papers of great interest were read by Drs. J. G. Wills, of New York; J. I. Gibson, of Iowa; Cassius Way, of Illinois; G. Ed. Leech, of Minnesota, and John Reichel, of Pennsylvania; all of which brought out valuable facts in the discussions.

An official invitation from the Live Stock Commission of the Panama Exposition was tendered the association, to hold its 1915 meeting in San Francisco, in connection with similar organiza-

tions of other countries, on this occasion, to make the meeting of international concern.

Prof. Ferguson was re-elected secretary-treasurer, and was given a vote of thanks for his good work, which most certainly has had much to do with the present prosperous condition of the association.

At the adjournment of the meeting there was a feeling among the members almost without exception that the association, having maintained and strengthened its position as a dignified scientific body, would each year grow stronger and greater, thus justifying the enthusiastic statement of the secretary-treasurer that it is the greatest organization of its kind in the world.

NOTE—We desire to acknowledge indebtedness to our esteemed colleague, Dr. Percival K. Nichols, of the New York City Board of Health, for the foregoing interesting and comprehensive account of the recent great meeting of the U. S. Live Stock Sanitary Association at Chicago.

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#### NOTES ON THE THIRTIETH ANNIVERSARY OF THE ILLINOIS VETERINARY MEDICAL ASSOCIATION.

The above association went into session at the Lexington, Chicago, immediately following the close of the U. S. Live Stock Sanitary Association, and President James Smellie, of Eureka, had the pleasure of presiding over a full meeting, as about 350 members were present. Owing to the fact that the U. S. L. S. A. had just preceded the Illinois state meeting, it was convenient to a number of distinguished members of the profession from other states to participate in the proceedings. Prominently among them we find Dr. John R. Mohler, of the Bureau of Animal Industry, Washington, D. C., presenting a paper on "Forage Poisoning with Special Reference to the Recent Outbreak in the Western States," and Prof. W. H. Dalrymple, of the Louisiana State University, who presented a most interesting paper entitled "Some of the More Important Insects Affecting Our Farm Animals." Dr. A. S. Alexander, of Wisconsin, discussed an important paper presented by Dr. J. M. Wright, State Veterinarian of Illinois, entitled "Illinois Stallion Registration Law." Prof. B. F. Kaupp, late of Colorado, presented a paper on "Contagious Abortion." Dr. A. T. Peters, of the Illinois State Laboratory, presented an excellent paper entitled "Open Tuberculosis"; and "Rabies as a Sanitary Problem" was the subject of a scholarly essay by Dr. C. A. White, of Chicago. On the evening of the

first day Professor Maxmillian Herzog, of Chicago, gave a most instructive illustrated lecture on "Cancer of Domestic Animals." The second evening was devoted to a banquet, which was well attended; there were a number of invited guests present, and many excellent after-dinner addresses were heard. The last day was given over entirely to a clinic at the Chicago Veterinary College. It was altogether a most excellent meeting, and we trust that Secretary Merillat, whom the association honored by re-election, will furnish us *his* report of it in the near future. Dr. J. F. Ryan, of Chicago, one of the faithful attendants at the A. V. M. A. meetings, was elected president of the organization, and the REVIEW congratulates him on receiving this merited token of high regard from his colleagues in Illinois.

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#### CENTRAL NEW YORK VETERINARY MEDICAL ASSOCIATION.

The third semi-annual meeting of the above association was held at the Vanderbilt Hotel, Syracuse, N. Y., on Wednesday, November 27, 1912. As a preliminary to the business session a clinic was held at the infirmary of Dr. H. A. Turner, No. 812 South Salina street, Syracuse, N. Y., at which several interesting subjects were operated upon. Dr. Hollingworth and Dr. Turner, assisted by others, performed the operations.

When the meeting convened at the Vanderbilt Hotel, the following members were found to be present: W. G. Hollingworth, J. A. Pendergast, A. J. Tuxill, Frank Morrow, R. M. Weightman, H. A. Turner, F. E. York, E. E. Dooling, W. L. Clark, J. C. Stevens, W. B. Switzer, J. M. Currie, Wilson Huff, A. E. Merry and E. W. Fitch.

The following visitors were also present: Dr. Taylor, of Henrietta, N. Y.; Dr. Cook, of Rochester, N. Y.; Dr. Tegg, of Rochester, N. Y.; Dr. Webber, of Rochester, N. Y., and Merritt A. Switzer, attorney for the Association, of Oswego, N. Y.

The following new members were received: H. V. Crandall, Syracuse, N. Y.; J. H. Hewitt, from the New York State Agricultural College, Morrisville, N. Y.; H. V. Stebbins, West Winfield, N. Y., and Frank Fowler, Mexico, N. Y.

The work of prosecution of illegal practitioners within the territory of this association, which has received careful attention during the past year, was placed before the meeting for discussion. The attorney for the association, Merritt A. Switzer, of Oswego, N. Y., outlined the work which had been done by the

prosecuting committee through his office. He showed that while no actual prosecutions have been found necessary, yet a considerable number of men, at least 50 per cent. of those reported within the year, had been forced to desist, and that no further complaints had been received against the majority of those who had not been reported as having desisted. After several of the members had expressed their opinion that the work should be continued along the lines already adopted, a resolution was offered by the prosecuting committee authorizing the said committee to begin prosecution against any men or man found to be practising within the association's territory illegally, and against whom sufficient evidence could be obtained.

Perhaps the most interesting action taken at this meeting, and one which more than any other thing will tend to the advancement of the profession and the unity of its members, was that taken in pursuance of the suggestion of Dr. W. G. Hollingworth, in relation to the matter of providing protection for the members of the association against any unjust prosecutions for malpractice and the like. The plan, as outlined by Dr. Hollingworth, will, when developed, make it the duty of the association, when such an action shall have been instituted against any member thereof, to investigate by committee the facts and circumstances of the case, and if, in the judgment of that committee, the prosecution shall be deemed unjust, the association shall defend the action, providing therefor the necessary funds and legal talent. It is claimed for this system of protection that the members of the association will be more closely united in interest, that they will be freed from the liability of being harried by those who have no just grounds for complaint, and that in this way the association itself will become of greater value to its members and be more worthy of their support. The action taken upon this suggestion consisted of the appointment of a committee, of which Dr. Hollingworth was made chairman, for the purpose of outlining and perfecting the plan, its report to be made in the form of a resolution, proper for the purpose of its inauguration, to be presented at the next annual meeting, to be held in June, 1913. This association thus becomes the pioneer for this state in taking such action for the protection of its members.

Other matters of business were taken up, after which interesting papers were presented. Dr. Merry, of Syracuse, spoke upon the inspection and control of meat by the municipality. In this he advocated that there should be a uniformity in the manner of disposal of carcasses declared to be diseased; expressed



his belief that all inspectors should be qualified veterinarians, and also favored the establishment of public abattoirs whenever practicable. Dr. Huff, of Rome, municipal meat and market inspector, gave other interesting facts in the course of the discussion which followed, as did Dr. Hollingworth, of Utica; Dr. Tegg, of Rochester; Dr. Stevens, of Cortland, and others.

Dr. Stevens gave an interesting case report under title of "An Uncommon Case," apparently a case of colic, in which the patient died, and upon post mortem the abdomen was found to contain a large amount of crushed stone, broken nails, tacks and brass wire.

A case of pleuro-pneumonia was reported by Dr. Tuxill. Autotherapy was not used in this case, but in the discussion which followed many favorable and adverse criticisms thereof were made.

The thanks of the association were extended to Dr. H. A. Turner for the use of his infirmary for the purpose of the clinic.

This meeting proved to be by far the most interesting of those yet held by this Association in the three short years of its existence, and it has found an important place and is filling an important need in the ranks of the profession for this section of the state.

While no banquet was held, many of the members gathered in the dining-room of the hotel at the close of the session for an enjoyable meal together before going out to take their appointed place in the work of the days to come.

W. B. SWITZER, Secretary.

#### THE NORTHWESTERN OHIO VETERINARY MEDICAL ASSOCIATION.

The above association convened in semi-annual session at Upper Sandusky on November 20, 1912.

President J. V. Newton opened the meeting at 10.30 a. m. and introduced Dr. Walter M. Smalley (M.D.), of Upper Sandusky, who gave the address of welcome.

Dr. W. A. Axby, of Harrison, responded in his usual pleasing manner.

The regular order of business of the association was then proceeded with, and election of new members. Nine were recommended by the Board of Censors as being qualified for membership.

The literary program was then taken up, the first number of which was a paper on "Cutaneous Quiltor as a Sequel to In-



fluenza," by Dr. John E. Turner of Kenton. Following the reading of the paper, many veterinarians present earnestly discussed the subject.

Adjournment for dinner was then taken.

Dr. Newton called the meeting to order again at 1.30 p. m., when Dr. Reuben Hilty presented his paper on "Hog Cholera Immunizations and Treatments," which was heard with great interest, as this malady deals out more daily loss in Ohio than any other disease of domestic animals. Many veterinarians entered into the discussion, making the subject of hog cholera one of great interest.

Dr. J. H. Blattenberg gave some practical suggestions along the line of surgical technique.

Dr. R. C. Longfellow (M.D.), Toledo, pathologist and bacteriologist to the association, gave the members a cheer and elaborated at length on the advancement of the profession, and placed emphasis on the personal appearance of the veterinarian as a valuable aid to that end.

Dr. S. W. Bailey opened the discussion on "The Advice to an Owner of a Tuberculous Cow." He said he advised that the animal be tested and if reacted to the test to be driven to a slaughter-house, where there is a government inspector, where the result of the test may be confirmed.

Among the visitors were Drs. E. H. Shepherd, of Cleveland; L. P. Cook, secretary of the Ohio State Veterinary Medical Board, of Cincinnati; Drs. W. A. Axby and T. F. Jones, of Newark, and W. E. Clemmons, of Granville.

Dr. Cook, in response to a call from the Chair, made a few remarks along the line of present needs of the veterinarians of Ohio. He being a newly elected senator to the general assembly of Ohio, from Hamilton County, thought that he could be of much assistance in the legal needs of Ohio's veterinarians. Several resolutions were adopted at Dr. Cook's suggestion, but space will not permit us to give them here, except one, which was a resolution to place a veterinarian on the State Board of Health. Dr. Axby was endorsed by the association as being qualified for the position. A committee was appointed to wait on the Governor in relation thereto.

The meeting then adjourned to meet in the banquet room of Hotel Gottfried. About 60 veterinarians and visitors (included among the latter, the physicians of Upper Sandusky) sat down. An orchestra furnished music, and several of Dr. Newton's favorite selections were rendered.

Dr. Newton acted as toastmaster and filled the place in a manner that delighted every one.

Toasts were responded to by Dr. Walter M. Smalley and other physicians of the city; also by Drs. Shepherd, Jones, Kline, Blattenberg, Longfellow, Axby, Cliffe and Clemmons.

The meeting adjourned to meet at the call of the Chair.

E. V. HOVER, Secretary.

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FIFTIETH ANNIVERSARY MEETING A. V. M. A.—Although still very early in the year, the local committees are shaping matters so that they will be in a position to make definite plans quickly later on. As a result of a recent meeting in New York, at which Chairman Hoskins took the reins (having been appointed to succeed Dr. Winchester, resigned), the following tentative plans were outlined:

The opening session will be held on Monday morning, September 1, at 10 o'clock. There will be six other general sessions as follows: Tuesday, Wednesday and Thursday at 10 a. m., Monday and Wednesday at 8 p. m., and the closing session on Friday at 2 p. m. The afternoons of each day, except Friday, will be devoted to section work. On Friday section work will be conducted in the forenoon.

On account of a resolution adopted at the last annual meeting it will not be possible to conduct the meetings of the Association of College Faculties and Examining Boards as a section, but it is proposed to have three meetings of this association, one on Monday, Tuesday and Wednesday, during the same time that the sections are in session.

A symposium on surgery has been arranged for Tuesday and no session of the Section of Medicine will be held on this day, as it was thought that those interested in general practice will wish to attend the symposium on surgery. A symposium for the Section on Medicine has been arranged for Wednesday, affording an opportunity for those interested in the Section on Sanitary Science and Police to attend. A symposium for the Section on Sanitary Science and Police can be arranged for Thursday and those interested in the Section on Medicine may attend.

It is proposed to invite five distinguished scientists to attend the meeting as the guests of the association, one of whom is to give a talk or paper at the opening of each general session, except perhaps the opening general session to be held on Monday morning.

# VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alabama Veterinary Med. Ass'n.	August, 1913....	Auburn.....	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.	Sept. 1-2-3-4-5 '13.	141 W. 54th St. New York, N. Y.	J. F. Carey, East Orange, N. J. C. J. Marshall, Philadelphia. J. B. Arthur, Russellville.
Arkansas Veterinary Ass'n.	1st and 3d Thur. of each month	Lec. Room La- val Un'y, Mon.	J. P. A. Houde, Montreal.
Ass'n Médéciale Veterinaire Fran- caise "Laval"	2d Fri. ea. mo.	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., Chicago.	3d Mon. ea. mo.	S. Omaha, Neb	E. J. Jackson, So. Omaha.
B. A. I. Vet. In. A., So. Omaha	Dec. 11, 1912....	San Francisco	John F. McKenna, Fresno.
California State V. M. Ass'n.	June and Nov.	Ottawa.....	A. E. James, Ottawa.
Central Canada V. Ass'n.	2d Tues. ea. mo	Syracuse.....	W. B. Switzer, Oswego.
Central N. Y. Vet. Med. Ass'n.	Jan., 1913.....	Chicago.....	D. M. Campbell Chicago.
Chicago Veterinary Society.	Feb. 6, 1912....	Denver.....	B. F. Kaupp, Ft. Collins.
Colorado State V. M. Ass'n.	Jan. Apl. Jy. Oct.	Hartford.....	B. K. Dow, Williamantic.
Connecticut V. M. Ass'n.	3d Mon. ea. mo.	Wilmington ..	A. S. Houchin, Newark, Del.
Delaware State Vet. Society.	3d Mon. ea. mo.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Essex Co. (N. J.) V. M. A.	2d Sat. ea. mo.	Atlanta.....	J. H. Taylor, Henrietta.
Genesee Valley V. M. Ass'n.	3d Sat. ea. mo.	Wash., D. C.	P. F. Bahnsen, Americus.
Georgia State V. M. A.	Dec. 5-6, 1912..	Boise.....	A. T. Ayers.
V. M. A. of Geo. Wash. Un'y.	Jan. 15-16, 1913.	Chicago.....	Louis P. Cook, Cincinnati.
Hamilton Co. (Ohio) V. A.	Nov. 12-13-14 '12	Indianapolis ..	G. E. Noble, Boise.
Idaho Ass'n of Vet. Graduates.	January 7-8, 1913	Ames.....	L. A. Merrilat, Chicago.
Illinois State V. M. Ass'n.	Oct. & Feb. ea. yr.	Topeka.....	A. F. Nelson, Lebanon.
Indiana Veterinary Association.	Oct. 8-12, 1912..	Lexington ..	C. H. Stange, Ames.
Iowa Veterinary Ass'n.	Jan., 1913.....	Lorain, O.....	J. H. Burt, Manhattan.
Kansas State V. M. Ass'n.	4th Wed. ea. mo.	Phil. H. Fulstow, Norwalk, O	Robert Graham, Lexington.
Kentucky V. M. Ass'n.	Feb. 4-5, 1913..	E. H. Yunker, Phila.	E. H. Yunker, Phila.
Keystone V. M. Ass'n.	July 10-11, 1912.	Augusta.....	Phil. H. Fulstow, Norwalk, O
Lake Erie V. M. Association.	Jan. 21-22-23, '13.	Baltimore.....	E. F. Flower, Baton Rouge.
Louisiana State V. M. Ass'n.	July, 1913.....	Young's Bost'n	C. W. Watson, Brunswick.
Maine Vet. Med. Ass'n.	Jan. 1913.....	Lansing.....	H. H. Counselman, Sec'y.
Maryland State Vet. Society.	Jan. 1913.....	Minneapolis..	J. H. Seale, Salem.
Massachusetts Vet. Ass'n.	Jan. 21-22-23, '13.	Kansas City ..	W. A. Ewalt, Mt. Clemens.
Michigan State V. M. Ass'n.	July, 1913.....	Kirksville.....	G. Ed. Leech, Winona.
Minnesota State V. M. Ass'n.	Jan. 1913.....	Bozeman.....	Wm. P. Ferguson, Grenada.
Mississippi State V. M. Ass'n.	January, 1912..	Lincoln.....	Hal. C. Simpson, Denison, Ia.
Missouri Valley V. Ass'n.	Jy. 30-31, Aug. 1.	Utica.....	S. Stewart, Kansas City.
Missouri Vet. Med. Ass'n.	June, 1913.....	Salisbury.....	A. D. Knowles, Livingston.
Montana State V. M. A.	Jan., 22-23, 1913.	Fargo.....	W. H. Tuck, Weeping Water.
Nebraska V. M. Ass'n.	Feb. and Nov.	Lima.....	H. J. Milks, Ithaca, N. Y.
New York S. V. M. Soc'y.	Jan. 8-9, 1913..	Columbus.....	M. J. Ragland, Salisbury.
North Carolina V. M. Ass'n.	Annually .....	Up'r Sandusky	C. H. Babcock, New Rockford
North Dakota V. M. Ass'n.	Dec. 14-15, 1911.	Okla. City.....	A. J. Kline, Wauseon.
North-Western Ohio V. M. A.	April, 1912.....	Toronto.....	Reuben Hilty, Toledo.
Ohio State V. M. Ass'n.	Jan. 21-22, 1913.	Harrisburg ..	F. F. Sheets, Van Wert, Ohio.
Ohio Soc. of Comparative Med.	Call of President	Manila.....	J. C. Howard, Sullivan.
Ohio Valley Vet. Med. Ass'n.	4th Tues. ea. mo.	Portland, Ore.	C. E. Steel, Oklahoma City.
Oklahoma V. M. Ass'n.	Mon. and Que.	Providence ..	C. H. Sweetapple, Toronto.
Ontario Vet. Ass'n.	Jan. and June..	Centralia.....	John Reichel, Glenolden.
Pennsylvania State V. M. A.	Jan. 2-3, 1912..	St. Louis.....	David C. Kretzer, Manila.
Philippine V. M. A.	1st Wed. fol. the	Reading.....	Sam. B. Foster, Portland, Ore.
Portland Vet. Med. Ass'n.	2d Sun. ea. mo.	Philadelphia..	Gustave Boyer, Rigaud, P. Q.
Province of Quebec V. M. A.	Dec. 18, 1912..	Aberdeen.....	J. S. Pollard, Providence.
Rhode Island V. M. Ass'n.	2d Tues. July '12	Los Angeles...	Clarence E. Smith, Greenville
South Carolina Ass'n of Veter'ns	Jan. Apl. Jy. Oct.	407 Ill. Ave....	F. Hockman, Louisville.
So. Illinois V. M. and Surg. A.	4th Tues. ea. mo.	Fort Worth...	Wm. T. Conway, St. Louis, Mo
St. Louis Soc. of Vet. Inspectors.	Mar. 18 19, 1912.	St. P.-Minneap	W. G. Huyett, Wernersville.
Schuykill Valley V. M. A.	2d Thu. ea. mo.	Logan.....	B. T. Woodward, Wash'n, D. C
Soc. Vet. Alumni Univ. Penn.	Mar., 1912.....	514-6th St., N. W.....	S. W. Allen, Watertown.
South Dakota V. M. A.	3d Wed. ea. mo.	Winnipeg.....	J. A. Dell, Los Angeles.
Southern Auxiliary of California	Jan. 1913.....	Jersey City.....	H. R. Collins, So. St. Joseph.
State V. M. Ass'n.	1st Wed. ea. mo.	141 W. 54th St.	A. C. Topmiller, Murfreesboro
So. St. Joseph Ass'n of Vet. Insp.	Monthly.....	Jersey City.....	R. P. Marsteller, Colgate St.
Tennessee Vet. Med. Ass'n.	July 11, 1912....	Newport News	S. H. Ward, St. Paul, Minn.
Texas V. M. Ass'n.	1st & 3d Fri. Eve.	Pullman.....	A. J. Webb, Layton.
Twin City V. M. Ass'n.	Jan. 9-10, 1913..	Wenatchee.....	G. T. Stevenson, Burlington.
Utah Vet. Med. Ass'n.	3d Thurs. ea. mo.	Pittsburgh....	C. H. H. Sweetapple, For.
Vermont Vet. Med. Ass'n.	July, 1912.....	Janesville....	Saskatchewan, Alta., Can.
Veterinary Ass'n of Alberta.	June 4, 1912....	York.....	M. Page Smith, Wash., D. C.
Vet. Ass'n Dist. of Columbia.			F. Torrance, Winnipeg.
Vet. Ass'n of Manitoba.			E. L. Loblein, New Brunswick
Vet. Med. Ass'n of N. J.			R. S. MacKellar, N. Y. City
V. M. Ass'n, New York City.			A. F. Mount, Jersey City.
Veterinary Practitioners' Club.			Geo. C. Faville, Norfolk.
Virginia State V. M. Ass'n.			R. J. Donohue, Pullman.
Washington State Col. V. M. A.			Carl Cozier, Bellingham.
Washington State V. M. A.			Benjamin Gunner, Sewickley
Western Penn. V. M. Ass'n.			J. P. West, Madison.
Wisconsin Soc. Vet. Grad.			E. S. Bausticker, York, Pa.
York Co. (Pa.) V. M. A.			

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Sworn to and subscribed before me this 28th day of September, 1912.

(Seal.)

MOSES MORRIS, Notary Public,  
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(My commission expires March 30, 1914.)

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